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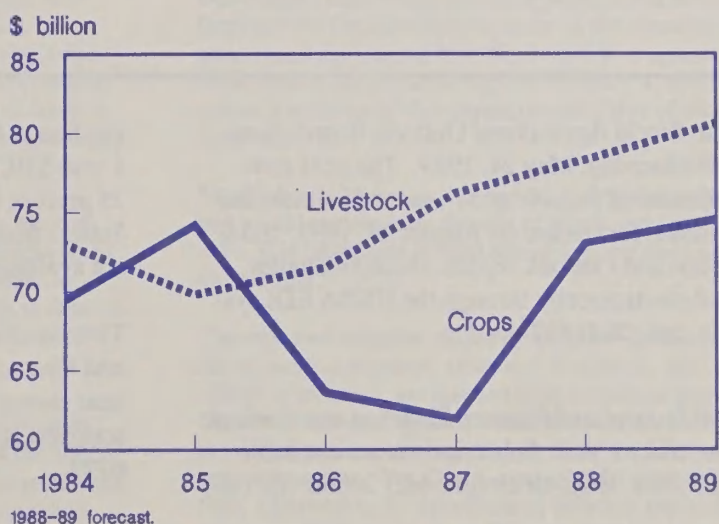
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Agricultural Income and Finance

Situation and Outlook Report

Cash Receipts Continue Increasing



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Glossary of Terms in Farm Income and Finance

Net cash income—is the difference between cash receipts, farm related income, and direct Government payments and cash expenses. This cash-based concept measures the total income farmers receive in a given year, regardless of the year in which the marketed output was produced. It indicates the availability of funds to cover cash operating costs, finance capital investments and savings, service debts, maintain living standards, and pay taxes.

Net farm income—is the difference between gross farm income and total expenses. This accrual-based concept measures the profit or loss associated with a given year's production. Additions to inventories are treated as income. Nonmoney items such as depreciation, the consumption of farm-grown food, and the net imputed rental value of operator dwellings are included.

Net cash flow—is the sum of: gross cash income, the change in loans outstanding, net rent to nonoperator landlords, and the net change in farmers' currency and demand deposits; minus gross cash expenses and gross capital expenditures. This financial indicator measures cash available to farm operators and landlords in a given year. It indicates the ability to meet current obligations and provide for family living expenses, and to undertake investments.

Debt/asset ratio—measures both proportional owner equity in the farm and the financial risk exposure of the operation (the extent to which the farm's assets have been borrowed against). It is calculated as total debt outstanding as of January 1, divided by the farmer's estimate of the current market value of owned assets of the farm business.

Equity level—measures net worth. It is the hypothetical balance that would remain from the sale of assets and paying off existing debt. It is calculated as total operator assets minus operator debt outstanding.

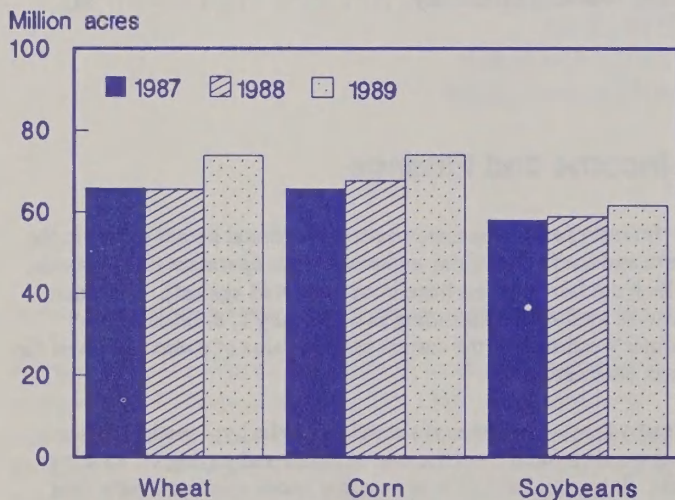
Current and inflation-adjusted dollars—In this report, dollar values of income, expense, asset, and debt items, unadjusted for the effects of inflation, are referred to as current or nominal dollars. Current or nominal figures, which indicate the purchasing power prevailing in the cited year, do not allow for fully accurate comparisons across time. To allow for meaningful comparisons across time, adjustments for the effects of inflation are made. Adjusted figures use a 1982 base and are interchangeably referred to as real, constant dollar, or inflation-adjusted.

Highlights

- The farm financial outlook continues favorable. Cash receipts for crops and livestock should continue increasing, reaching \$151 to \$158 billion.
- Financial performance measures are suggesting continued improvement in the health of U.S. agriculture. Stable debt and rising asset values are increasing the net worth of the sector.
- On March 1 farmers said they intended to increase spring plantings about 5 percent from 1988. The expansion is due primarily to reduced acreage reduction requirements. The increased production will boost net farm income.
- Stocks of the major grains and oilseeds are down going into the 1989/90 marketing year as farmers reduced inventories during last year's drought to maintain income. Increased corn and soybean production this year, leading to higher inventories, could add \$4 to \$7 billion to gross income.

Net cash income is expected to decline about 7 percent from 1988, to \$50-\$55 billion. In constant (1982) dollars, it will be near 1985's level of \$42 billion. However, with increased crop production, net farm income could rise more than 15 percent, exceeding last year's drought-reduced level. In constant dollars, net farm income could approach \$40 billion for the first time since 1975.

Figure 1
Planted Acres



States in the Northeast and West, where both crops and livestock will post higher-than-average gains, should show higher net cash incomes in 1989. Other regions should record slightly lower incomes than last year. The anticipated decline in Government payments will be a factor affecting incomes in the Midwest and the Southeast.

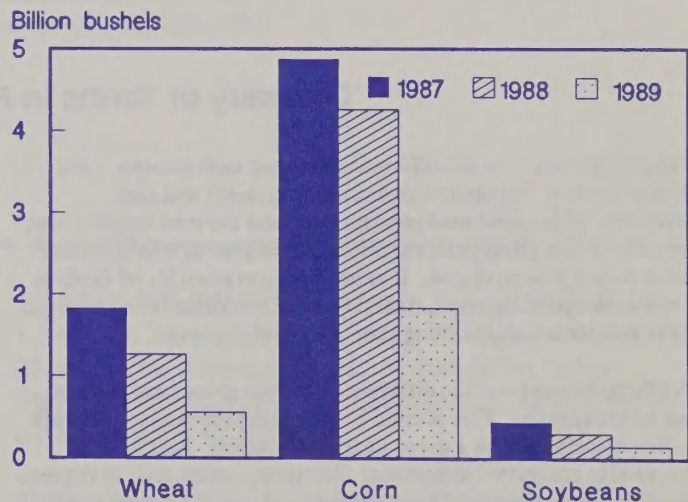
Total crop and livestock receipts may be 1 to 5 percent above 1988. Wheat receipts could be more than \$1 billion higher, in response to higher prices and increased marketings in calendar 1989. Cash receipts for feed grains could rise nearly \$1 billion, while soybean receipts should remain near \$12 billion as higher soybean production offsets lower prices. Red meat receipts are forecast to remain near 1988, but cash receipts from poultry production may advance more than 10 percent.

Cash expenses are projected to climb 5-7 percent in 1989. Costs for manufactured inputs will probably rise more than cost for farm-origin inputs. Fertilizer and pesticide expenditures could advance 10-15 percent as prices and planted acreage increase.

Farmland values are continuing to rise and should go up 7 to 9 percent this year. With real estate now accounting for about three-quarters of the farm sector's total assets, movements in land values dramatically affect net worth. Coupled with stable debt, higher land values could add \$40 billion to the wealth of the sector.

For the general economy, first-quarter statistics suggest a slowing, largely the result of tighter Federal Reserve policies. For agriculture, however, interest rates may fall, the dollar may decline slightly in international markets, and personal incomes will continue growing.

Figure 2
Beginning Stocks, June 1



Production Gains May Push Net Farm Income to New High

Higher crop and meat production, combined with strong prices and moderately higher expenses, are likely to cause a large increase in net farm income. Gross cash income may be unchanged from 1988, because an expected 2- to 3-percent increase in commodity receipts over the 1988 record of \$150.2 billion would just offset the anticipated 20- to 25-percent decline in direct Government payments. However, because large production gains are forecast, total gross income (gross cash income plus nonmoney income plus inventory adjustment) is expected to grow nearly 10 percent, more than enough to offset a 4- to 5-percent increase in total expenses.

Net cash income, on the other hand, is expected to slip 5-7 percent as cash expenses are likely to grow 4-5 percent in the face of unchanged gross cash income.

In real (1982) dollars, net farm income is still expected to rise and net cash income fall. With an expected 1989 inflation rate of 4 to 5 percent, real net farm income would be the highest since 1975. Real net cash income for 1989 would be the lowest since 1985.

Cash Receipts

Crop and livestock receipts are both expected to be record-high in 1989. Crop receipts are expected to rise 2 to 4 percent following a 17-percent increase in 1988. This increase would push crop receipts above the 1985 record of \$74.2 billion. Livestock receipts are expected to continue a 3-year climb to a second consecutive record.

However, measured in constant dollars (1982), crop and livestock receipts are expected to fall 2 percent in 1989 because the increase from 1988 will be lower than the expected rate of inflation. This decline compares with an 8-percent real increase in 1988 crop receipts and a 6-percent real decline in livestock receipts.

Wheat Receipts Up, Cotton and Rice Down

For the major crops, wheat receipts are forecast to rise the most. Even with the projected 13-percent increase in production, due primarily to a decline in acreage reduction program (ARP) requirements from 27.5 percent in 1988 to 10 percent in 1989, continued strong demand is projected to keep upward pressure on wheat prices throughout 1989. Ending stocks for the 1988 crop are expected to be only 20-25 percent of total use. This compares with an average of 65 percent during 1983-1987.

A moderate increase is seen for greenhouse and nursery receipts. The projected 5-percent growth follows the 10-

percent annual increase that has occurred since 1982. Because demand for ornamental trees and shrubs and floriculture crops, such as cut flowers, is affected by population growth and income, greenhouse and nursery receipts are likely to continue to grow as long as the economy is expanding.

Corn receipts should remain stable in 1989. Planted acres are expected to increase by 8 percent largely because the corn ARP has been cut from 20 percent to 10 percent and there is no paid land diversion program this year. Prices are expected to decline only moderately in calendar 1989 because stocks are declining and demand remains strong. Corn stocks are forecast to be the smallest since the end of the 1984 crop year, more than 50 percent below 1987/88. Export demand is up over last year. Led by Soviet purchases, corn exports are forecast up more than 20 percent. However, domestic use is forecast down 12 percent, leading to a drop in total use. Some recover in use is expected for 1989/90, but use is still expected to be less than production, leading to an increase in stocks.

Soybean receipts are expected to remain unchanged following a 25-percent gain in 1988. Last year's receipts were the highest since 1984 and 30 percent above 1986. Production is expected to rise since farmers intend to plant 5 percent more acres this year. Part of this increase is because ARP restrictions have been relaxed to permit producers, under certain conditions, to plant soybeans and other nonprogram crops on corn and wheat ARP acres. Season average prices are expected to fall by at least 15 percent from 1988/89, but the decline over the calendar year is expected to be moderated by an increase in export demand. Exports of the 1988 crop probably declined more than 30 percent, whereas exports for the 1989 crop could increase by roughly 10 percent.

A 4-percent decline is expected for cotton receipts, following an increase of over 15 percent in 1988. A factor contributing to the decline in cotton receipts is a decrease in planted acres due to a doubling of the ARP requirement, from 12.5 percent to 25 percent. Largely because of this increase in the ARP, farmers have indicated that they will plant only 88 percent of the acres planted last year. However, even with an expected increase in exports for the 1989/90 crop year, high stock levels will moderate any price increases attributable to lower production.

Poultry Leads Livestock Receipt Gains

Poultry receipts are expected to record a large increase. Broiler, turkey, and egg receipts are all expected to rise. Broiler receipts may rise 18-20 percent, equalling the 1988 rate of increase, as a 4- to 5-percent growth in production

falls short of the projected 6-percent increase in consumption.

Turkey and egg receipts are both expected to rise over 20 percent. Turkey prices are recovering from the very low levels of last year and production may show a modest gain, particularly in the last half of 1989. Per capita turkey consumption may exceed 16 pounds, a 23-percent increase in 3 years. In contrast, production and consumption of eggs are expected to decline. Per capita consumption of eggs will continue its downward trend, declining 4 percent. Exports are also expected to be down but an increase in hatching use, combined with a 3-percent decline in total supply, is expected to lead to a 17- to 23-percent increase in the wholesale price of eggs.

Receipts for cattle and calves are expected to remain at 1988's record level. An increase in cow slaughter and heavy placements of heifers on feed (due to poor forage conditions in some States) will hold beef production near the 1988 level.

Forage and feed conditions this spring are critical in determining how many heifers are retained for breeding. A good hay crop and adequate forage would help keep feed costs down. On the other hand, poor moisture conditions could force producers into supplemental feeding of herds this summer or into a sell-off of breeding stock.

Hog receipts are expected to be stable following a 10-percent decline in 1988. A 60-percent decline in the hog-corn ratio resulted in low returns to producers with many losing more than \$15 per hog in the latter part of the year. These low returns contributed to a 9-percent increase in slaughter and a 16-percent drop in prices. Net returns for hog producers are expected to increase during 1989. Prices should decline as per capita pork consumption levels off at last year's 63 pounds (9 percent above 1986) in conjunction with stable pork supplies.

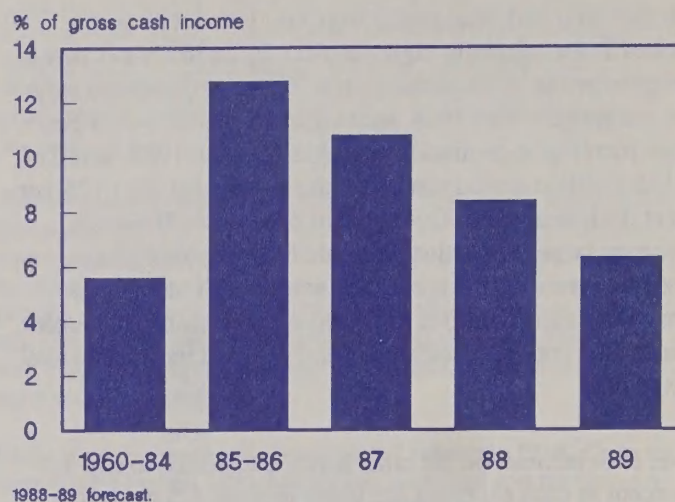
Dairy receipts are also expected to go up moderately from 1988. Milk production may rise about 2 percent. Production per cow increased an average of 3 percent per year between 1984 and 1988, more than offsetting a decline in the average number of cows. Even with higher production, the supply-demand situation is expected to be tighter than in 1988. Prices are expected to rise slightly as commercial use increases 1 to 3 percent. The resulting increase in receipts is likely to match the 1985 level.

Government Payments

Government payments are expected to decrease 20-25 percent in 1989. A decline of this size, on top of a more modest decline in 1988, represents a nearly 40-percent drop from the

Figure 3

Government Payments Declining



all-time high set in 1987. A primary factor is the relatively low corn and sorghum payments on the 1988 crop. By raising crop prices, the 1988 drought reduced the gap between

target prices and market prices, thereby reducing the deficiency payment rates for the 1988 wheat and feed grain crops. Most of the drought-induced reductions in 1988/1989 corn and sorghum deficiency payments will show up in 1989.

Also exerting downward influence on Government payments is the forecast for relatively strong wheat prices throughout 1989. Market prices relative to both loan rates and the target prices are important determinants of the level of direct payments. For example, when wheat prices are between the loan rate and the target price, each additional \$0.05 increase in the market price reduces the wheat deficiency payment by roughly \$100 million. The outlook for very low wheat stocks and relatively strong demand suggests that prices will remain high.

Just as higher prices are expected to reduce 1989 wheat deficiency payments, the projected weakening of market prices for corn towards the end of 1989 will increase deficiency payments for the 1989 crop. However, the overlap of the calendar and marketing years means that lower prices for the 1989 corn crop will affect 1990 direct payments.

While wheat and corn deficiency payments are likely to be down in 1989 — wheat because of high 1989 prices, corn and sorghum because of high 1988 prices — a number of components of direct payments are likely to rise. First, fewer than half of the drought relief payments under the Disaster Assistance Act of 1988 were actually paid in 1988. The remainder, probably \$2 to \$2.5 billion, should be paid by mid-1989.

Figure 4
Net CCC Loans

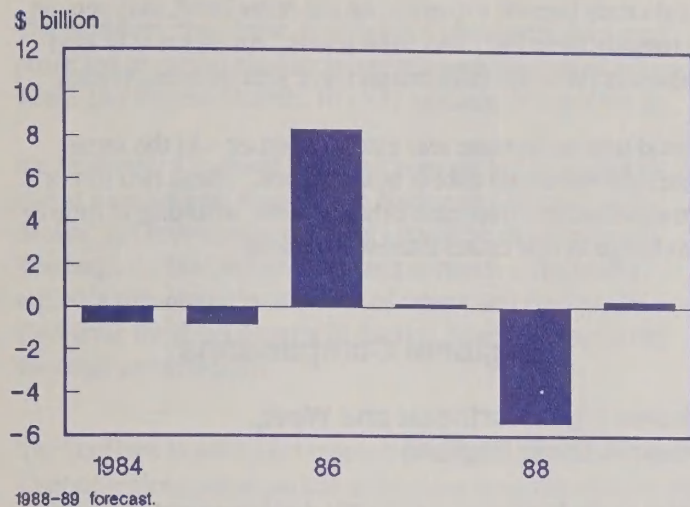


Figure 7
Farm Production Expenses

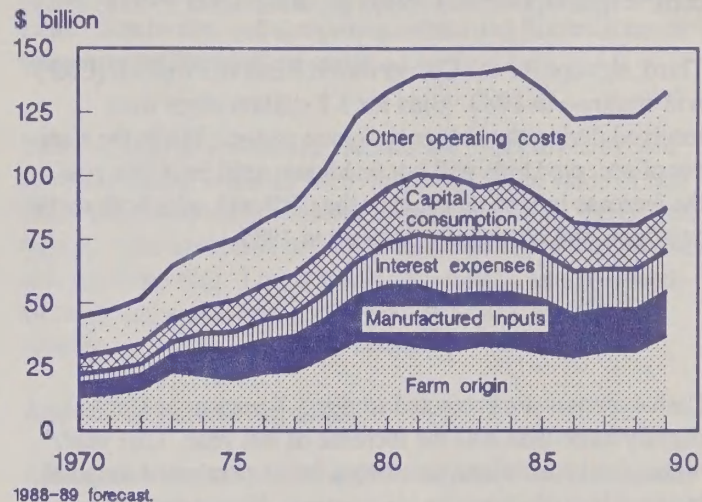


Figure 5
Gross Cash Income

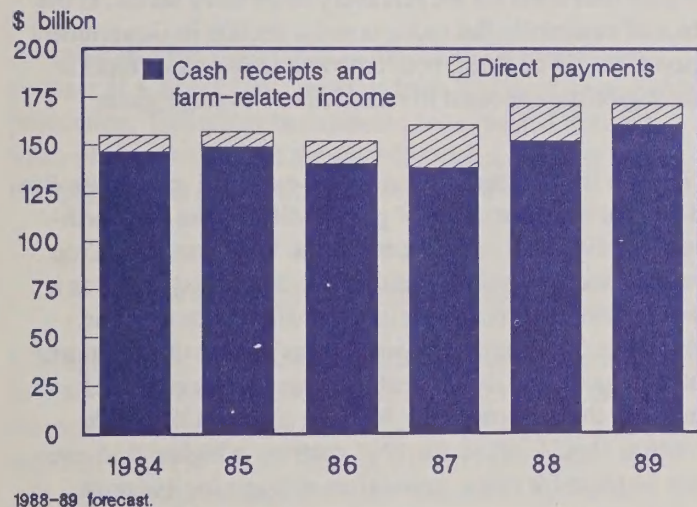


Figure 8
Prices Paid and Received by Farmers

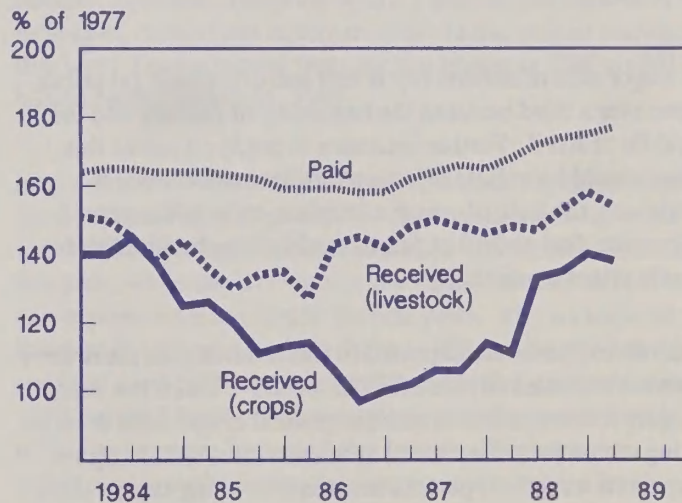


Figure 6
Direct Government Payments: Cash and PIK

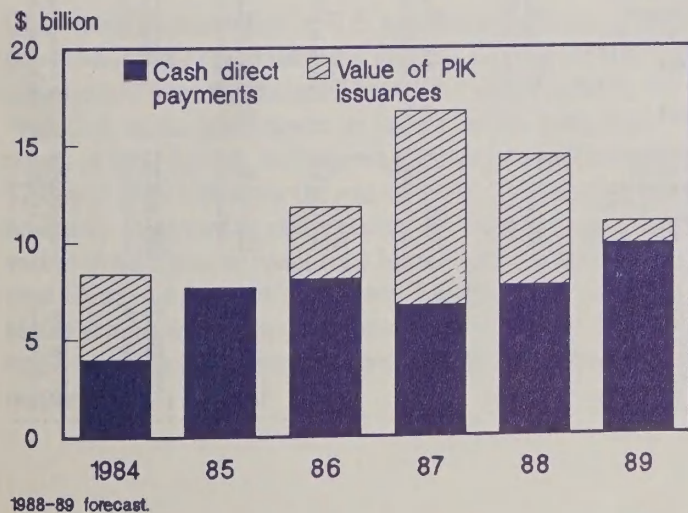
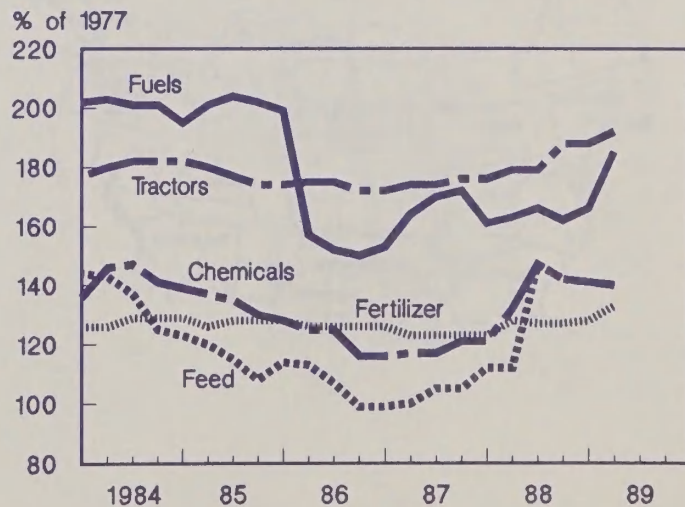


Figure 9
Prices Paid for Major Production Inputs



Second, advance deficiency payment rates have been raised by 10 percent. This will not change the estimated total deficiency payments for 1989 crops, but it will shift some of the corn, sorghum, rice, and cotton payments from 1990 to 1989.

Third, signups for the Conservation Reserve Program (CRP) will continue in 1989. Bids for 3.2 million acres were received during the February signup period. While the number of accepted bids will not be known until later this year, the increase in land enrolled in the CRP will raise both rental payments and cost share expenses in 1989.

Expenses

Cash expenses are projected to rise 5-7 percent in 1989, slightly more than half the increase of last year. Last year, higher feed costs alone accounted for 45 percent of the total increase in cash expenses. In contrast, 46 percent of the expected increase in 1989 is accounted for by expense items directly related to more acres planted: seed, fertilizer, fuels and oils, and chemicals. Expenditures on each of these items are expected to rise at least twice the rate for total cash expenses.

A major area of uncertainty is fuel and oil. Crude oil prices rose over a third between the beginning of January and the middle of April. Further increases in crude oil prices this year should have little effect on fertilizer and chemical expenses, the bulk of which take place early in the year. However, fuel and oil expenses could rise substantially if crude prices continue up.

Interest expenses are expected to rise modestly, as short-term interest expenses advance for the second consecutive year, largely to finance the increase in planted acres. Also contributing are projected increases in interest rates and in capital expenditures. More planted acres and an aging capital stock,

especially tractors, are behind the higher capital expenditures.

Real estate interest expenses, on the other hand, may remain at roughly their 1987 and 1988 levels. An increase in land values in 1989, the third consecutive year of rising prices,

would tend to increase real estate expenses. At the same time, old real estate debt is being retired. These two forces are expected to offset each other in 1989, resulting in little or no change in real estate interest expenses.

Regional Comparisons

Income Up In Northeast and West, Down In Other Regions

States in the Northeast and the West are expected to experience higher net cash income in 1989 even though net cash income for the United States is expected to fall 5 to 10 percent. The 6- to 8-percent increase in the Northeast follows a decline last year caused by a big increase in expenses, primarily feed costs for the relatively large dairy sector, in the face of essentially flat receipts and a decline in Government payments. In contrast, both crop and livestock receipts in the region are expected to record above average gains.

Net cash income in the West is also expected to increase 6 to 8 percent but the sources of growth differ from the Northeast. In 1988, net cash income in the West was flat. Crop receipts were up a little less than for the United States as a whole, while livestock receipts rose slightly more. The decline in Government payments was greater than in most other regions, but the percent increase in cash expenses matched the national total. In 1989, crop and livestock receipts should follow the 1988 pattern: a higher-than-average increase for crops, lower-than-average for livestock.

Figure 10

U.S. Regions



Table 1--Regional income

	Receipts		Direct	Cash	Gross	Net cash
	Crops	Livestock	payments	expenses	income	income
1989						
Billion dollars						
Northeast	3.5	7.0	.2	7.4	11.1	3.6
Midwest	29.7	35.1	5.4	51.4	72.4	21.1
Southeast	12.3	11.6	.8	16.9	25.7	8.9
So. Central	8.4	12.9	2.8	17.0	25.1	8.2
West	21.5	14.0	1.7	25.6	38.3	12.6
U.S. Total	75.5	80.6	10.9	118.3	172.7	54.4
1988						
Northeast	3.3	6.5	.2	7.1	10.4	3.4
Midwest	27.7	33.6	9.4	49.0	72.9	24.0
Southeast	12.1	11.7	.9	16.1	25.8	9.7
So. Central	9.4	12.2	2.3	16.3	25.0	8.7
West	19.8	13.8	1.7	24.8	36.4	11.6
U.S. Total	72.4	77.9	14.5	113.1	170.5	57.4
1987						
Northeast	3.4	6.6	.3	6.4	10.5	4.1
Midwest	23.2	34.2	10.5	45.0	70.0	25.0
Southeast	10.9	10.5	1.2	14.6	23.5	8.9
So. Central	6.6	11.8	2.7	14.8	22.1	7.4
West	17.9	13.2	2.1	22.5	34.2	11.7
U.S. Total	61.9	76.2	16.7	103.3	160.4	57.1

However, the level of Government payments is projected to be essentially unchanged in 1989 and the rate of increase in cash expenses should be less than for the Nation as a whole.

The Midwest, Southeast, and South Central regions all projected to record slightly lower net cash income than last year. The largest decline, 10 to 12 percent, is expected in

the Midwest. Crop and livestock receipts are expected to rise at a higher rate than for the Nation as a whole but the decline in Government payments could be much steeper. The large decline in Government payments reflects this region's substantial production of wheat and feed grains. Payments for these crops will decline more than payments for other commodities.

The declines in net cash income in the Southeast and South Central regions are expected to be more moderate than in the Midwest. In the Southeast, gross cash income should be unchanged from last year as a 10-percent decrease in Government payments offsets higher cash receipts. Combined with higher cash expenses, the decline in net cash income is expected to be between 6 and 9 percent.

A similar decline is expected in the South Central region because of a drop in crop receipts from lower cotton and rice production. Government payments are expected to offset some of this decline, but the overall result is likely to be a 6- to 8-percent fall in net cash income for 1989.

Farm Sector Balance Sheet

U.S. agriculture's financial position will continue to improve in 1989 as both sector asset values and equity increase. The increases will extend 1987's and 1988's reversal of a downturn that began in 1982. Most of the increase in asset value will again be attributable to higher farm real estate values, which are expected to outpace inflation. Improved asset values will also boost farm equity, given that little change in total farm debt is expected during 1989.

Asset Growth Expected To Continue in 1989

Continuing improvement in U.S. agriculture's financial position during 1989 could raise the value of farm assets (excluding operator household assets) between 4 and 6 percent. With U.S. agricultural assets on December 31, 1988, estimated at \$751 billion, such increases imply a total between \$785 and \$795 billion by the end of 1989. The increase can be mainly attributed to rising real estate values. Real estate values (which now account for 73 percent of the sector's total assets) are forecast to increase 7 to 9 percent, reflecting higher returns from current income. The slight uptrend in interest rates is not expected to override the gains from returns.

By the end of 1989, nonreal estate assets are expected to decline slightly from their \$200 billion level on December 31, 1988. The value of crops stored is expected to be lower as market prices drop from the drought-induced levels of 1988. Machinery and equipment values and financial assets may increase by small amounts.

Because crop and livestock receipts are expected to exceed previous record levels in 1989, increases in the value of real estate assets should be reasonably uniform across the United States. One exception may be where cotton and rice production are important. Lower returns from these two commodities may cause real estate values in those areas to rise less rapidly.

Assets Grew During 1988

An increase in asset values in 1989 would be the third yearly rise and follow the 5.9-percent gain recorded for 1988. Real estate assets rose 5.5 percent in 1988. Nonreal estate assets advanced 7 percent due primarily to a nearly \$8-billion increase in the value of the livestock and poultry inventory and \$5 billion more in the value of crops stored. The increase in assets, combined with a 3-percent decrease in farm debt, raised farm equity in 1988 for the second consecutive year. Equity moved from \$566.5 billion in 1987 to \$613 billion on December 31, 1988.

Real estate values rose in all farm production regions except the Southern Plains (figure 11). Major gains were recorded in the Corn Belt and Northern Plains for the second consecutive year, while the increases in the Delta, Pacific, and Mountain regions were the first in several years. The widespread increase in real estate values during 1988 can be attributed partly to a net cash increase for the sector that outpaced even 1987's record level. Higher market prices for grains mostly offset the negative impact of the drought. Higher cattle prices also brought livestock cash receipts to record levels.

Figure 11

Percent Change in Farmland Value Per Acre, February 1988-89, By Farm Production Regions



Table 2--Debt outstanding, excluding operator households, by lender, December 31

Lender	1983	1985	1986	1987	1988P	1989F
	Million dollars				Billion dollars	
Real estate						
Federal Land Banks	45,026	41,204	34,773	29,867	28	27 to 30
Farmers Home Administration	8,718	9,540	9,482	9,249	9	6 to 9
Life insurance companies	11,834	11,035	10,199	9,231	9	6 to 10
Commercial banks	8,494	10,443	11,677	13,307	14	13 to 16
CCC storage facility	338	307	123	46	1/	1/
Individuals & others	29,847	25,160	22,218	19,086	17	15 to 17
Total	104,807	97,689	88,472	80,786	76	74 to 78
Nonreal estate						
Commercial banks	37,075	33,738	29,678	27,589	28	28 to 30
PCAs & FICBs	19,392	14,002	10,581	9,271	9	8 to 10
Farmers Home Administration	12,855	14,714	14,425	14,123	13	8 to 12
Individuals & others	18,566	15,070	12,143	10,916	12	12 to 13
Total	87,888	77,524	66,827	61,899	62	60 to 64
Total debt	192,695	175,213	155,299	142,685	138	134 to 142

1/ Less than \$500 million.

Interest rates remained relatively stable for most of the year, with only a slight upward trend. Rates on new Federal Land Bank loans averaged 10.1 percent during 1988.

Debt Levels To Stabilize

Preliminary indications are that total farm business debt declined more than 3 percent in 1988, marking the fifth consecutive year of debt reduction (table 2). Expectations that the drought would produce sector-wide cash shortfalls and escalate new loan demand were not realized. Instead, those farmers with near-normal production or available inventories benefited from improved commodity prices. A second consecutive year of record net cash income, coupled with advance deficiency and drought relief payments, provided farmers with adequate cash to meet operating expenses, replace capital items, expand their operations, and reduce outstanding debt. Farmers remained cautious in their expansion activities, as evidenced by the fact that appreciation of land values and general improvement of the agricultural

Figure 13

Farm Debt as Percentage of Assets

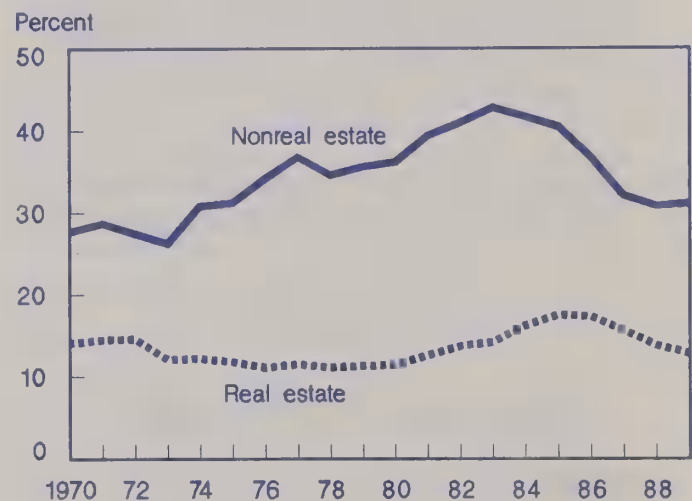


Figure 12

U.S. Farm Business Balance Sheet

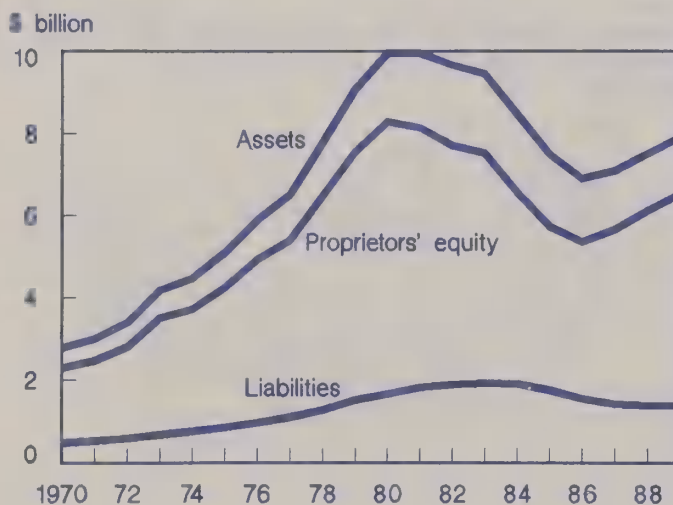
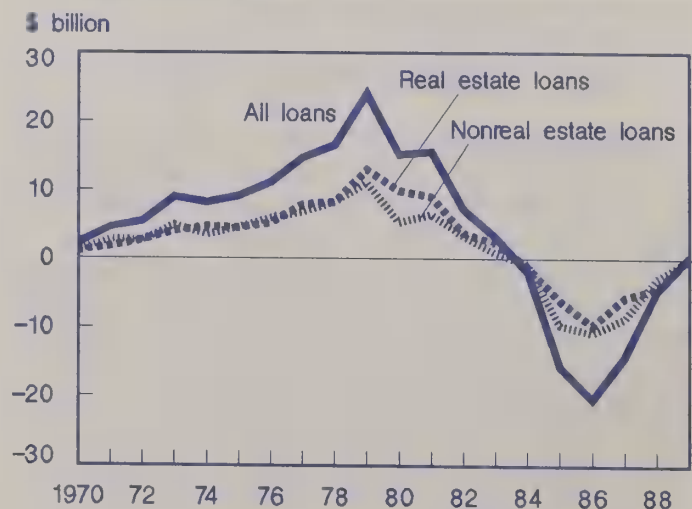


Figure 14

Annual Change in Farm Debt



economy did not result in a new round of debt-financed growth.

Demand for agricultural loans did not expand rapidly in 1988. Direct Government payments accounted for almost 25 percent of net cash income, down from 30 percent in 1987. While relatively less important in 1988, Government payments still provided the margin that allowed many farmers to operate profitably in a potentially disastrous year. The lack of increased borrowing suggests that both farmers and lenders retained a conservative attitude concerning the permanence of the return of the farm sector's financial health.

Total farm business debt has fallen more than 28 percent from its 1983 peak (figure 12). The rate of debt reduction, however, slowed from 8 percent in 1987 to 3 percent in 1988. Total debt is forecast to remain relatively constant through 1989.

FmHA Facing \$8 Billion Writeoff

Farm debt movements in 1989 will reflect the relative speed with which the various provisions of the Agricultural Credit Act of 1987 are implemented. A major influence on debt levels, at least for the next several years, will be the rate at which Farmers Home Administration (FmHA) is able to work through its problem loan portfolio. Loan delinquency status reports suggest that FmHA could possibly write off as much as \$8 billion from its farmer loan program portfolio over this time (table 3).

FmHA borrowers are not only delinquent, but the bulk of the amount may be uncollectible. Of \$8.4-billion delinquent interest and principal payments at the end of fiscal 1988, almost \$8.2 billion was outstanding more than 1 year, with \$6.6 billion outstanding more than 4 years. Almost 85 percent of the amount delinquent more than 4 years is on non-real estate loans, suggesting virtually no security backing them. Many of the reportedly delinquent borrowers have probably quit farming. Over \$1.1 billion is reported delin-

quent on Economic Emergency loans, a program that has not been authorized since fiscal 1984. FmHA's inability (due to court injunction and legal action) to collect from chronically delinquent borrowers has undoubtedly delayed reporting of loan losses that were actually incurred several years ago.

Actual FmHA debt levels at the end of 1989 will reflect not only the catching up of the reporting of these cumulative past losses, but also the loan amounts written off as restructuring and debt deferral options are applied to currently delinquent loans. The 1987 Act legislates a policy of keeping FmHA borrowers on the farm, while limiting long-term losses to the Government. Borrowers are working with the Agency to develop cash flow budgets under alternatives from the menu of financing plans available under FmHA's five-phase loan servicing policy. Borrowers failing to show positive cash flow under interest rate reduction and debt deferral options can have loans written down to current appraised value less FmHA's cost of liquidation. While the exact amount of loans eligible for this restructuring is presently unknown, it appears that many FmHA borrowers desiring to remain in farming will be able to do so.

Farmer Mac Entering Mortgage Market

Despite reductions in FmHA loan balances, overall debt levels should be virtually unchanged at the end of 1989, as other lenders respond to the improving agricultural economy. Farmer Mac, the secondary mortgage market authorized by the Agricultural Credit Act of 1987, could be buying its first pools of mortgages by the end of 1989. Lenders anticipating originating and servicing loans to be sold to Farmer Mac, principally commercial banks, life insurance companies, and the Farm Credit System, have an incentive to establish a presence for future participation in this market. Added competition may result in favorable terms for loans to financially sound borrowers. As qualifying standards for eligible loans are finalized, lenders will be better able to write loans in anticipation of meeting those standards. An expected continuing appreciation of land values should spur

Table 3--FmHA-insured borrowers major farm programs debt outstanding and delinquency amounts, September 30, 1988

Loan type	Loan amount outstanding	Unpaid principal delinquent	Amount delinquent	Amount delinquent	
				Over 1 Year	Over 4 Years
	Thousand dollars				
Farm ownership	7,255,874	2,253,264	609,184	575,371	388,975
Operating loans	5,698,319	2,082,437	1,441,802	1,363,444	804,670
Emergency disaster	8,413,455	5,932,234	4,801,549	4,739,425	4,249,523
Economic emergency	3,376,279	2,085,237	1,408,611	1,381,823	1,108,388
Soil and water	264,346	114,492	52,615	50,609	36,384
Major farm program debt	25,008,273	12,467,664	8,313,761	8,110,672	6,587,940
Real estate debt 1/	9,835,933	3,533,826	1,428,386	1,377,563	1,032,489
Nonreal estate debt 2/	15,800,230	9,057,587	6,947,958	6,794,073	5,608,679
Total farm business debt	25,636,163	12,591,413	8,376,344	8,171,636	6,641,168

1/ Includes farm ownership, soil and water, grazing association, Indian tribe acquisition, annual payment rural housing, and 50 percent of economic emergency loans. 2/ Includes emergency, economic opportunity, and all operating loans and 50 percent of economic emergency loans.

Source: Farmers' Home Administration 616 Report, September 30, 1988

the demand for new loans, as farmers, more confident that land values will not decline in the near future, implement delayed expansion plans. The demand for land in some areas may exceed the available supply, because farmers who have weathered the financially difficult 1980's may be reluctant to sell, anticipating a rebuilding of lost equity through capital gains.

Real Estate Debt Steady In 1989

Real estate debt is forecast to be virtually unchanged at the end of 1989. However, excluding FmHA write-downs, real estate debt to other lenders is anticipated to increase over \$1 billion. Farmer reaction to generally rising land values may encourage credit-financed expansion beyond the limits possible through internal funding. While lenders can also benefit by holding on to real estate during periods of rising land values, lender programs to reduce inventories of owned properties may be more aggressively pursued, because more properties can be sold without adversely affecting local land markets. Inventory reduction programs may offer the best means by which lenders can maintain share of the farm credit market, while reaffirming the lender's commitment to remain a reliable source of agricultural credit.

Federal Land Bank (FLB) debt decreased 38 percent from 1984 through 1988. The rate of decline slowed from 14 percent in 1987 to 6 percent in 1988. FLB debt is forecast to increase 2 percent in 1989. Generally, the Farm Credit System's provisions of concessionary financing to purchasers of foreclosed properties has stimulated sales of properties held in inventory. The value of acquired property owned by the Farm Credit System declined from over \$1.1 billion in March 1987 to \$661 million by the end of 1988. Sales (and some reappraisals) produced net gains on other property owned in the second and fourth quarters of 1988, suggesting that land value appreciation is allowing the Farm Credit System to sell inventory properties for prices above the book value recorded at time of acquisition.

FmHA real estate debt decreased almost 5 percent in 1988, and could decline over 7 percent in 1989. The debt forecast for 1989 anticipates a writeoff of approximately half the seriously delinquent real estate loans. This estimate could change dramatically depending on what portion of the delinquent debt FmHA actually restructures. FmHA may retain an equity interest in loans restructured according to one of the available options, with the amount written down recoverable in the future, at either the time of resale or a predetermined reappraisal date.

Life insurance company lending on farmland has fallen 26 percent from its 1982 peak, including a 5-percent drop in 1988. Several life insurance companies anticipate active participation in Farmer Mac and are expected to increase lending efforts. Although these companies are actively marketing properties acquired through foreclosure, most are

managing property obtained through past foreclosures, choosing to hold long-term agricultural assets in their portfolios as farmland property owned instead of mortgages. Life insurance companies have been increasingly shifting from mortgage assets in their portfolios, as holdings of all mortgages have declined from almost 39 percent of all life insurance company assets in 1966 to 20 percent in 1988. Farm real estate mortgages decreased in importance from a peak of over 10 percent in 1979 to less than 5 percent of all mortgages held at the end of 1988.

Commercial bank debt secured by farm real estate has increased throughout the 1980's, due primarily to banks requiring additional security for production and machinery loans. While total farm real estate debt decreased more than 23 percent from 1983 through the end of 1988, commercial bank real estate debt rose more than 66 percent during the same period, including an increase of over 6 percent in 1988. An increase exceeding 5 percent is forecast for 1989, as banks continue to seek farmland as security for operating loans and new machinery loans. Commercial bank real estate debt climbed from 18 percent of all commercial bank debt in 1982 to over 33 percent in 1988. While Farmer Mac will be a major force in bank real estate lending in the future, bank debt could increase dramatically in 1989 in response to experimental utilization of this secondary market for farm mortgages.

The Commodity Credit Corporation (CCC) has made storage and drying facility loans to farmers since 1949. The debt on these loans peaked at almost \$1.5 billion in 1980. Few new loans have been issued since, and by the end of 1988 the loan balance had gradually been paid down to less than \$30 million. These loans are expected to account for less than \$15 million of outstanding real estate debt by the end of 1989.

Real estate debt owed to individuals and others, created primarily through seller financing of real estate transfers, decreased by over 13 percent in 1988, and could decline another 5 percent in 1989. From 1983 through the end of 1988, real estate debt owed to individuals and others decreased over 44 percent, as lower sales prices and growing seller hesitancy to finance land transactions reduced debt levels. Although land values have been improving since 1987, sellers appear to be less willing to bear the risk of delaying receipt of a significant proportion of the contract sales price. While there are still tax advantages to installment sales, less favorable taxation of capital gains has made this alternative less attractive. Additionally, annual surveys are showing a steadily increasing proportion of sales that are all cash transactions. These factors will likely continue through 1989, further reducing the importance of seller financing.

Nonreal Estate Debt To Increase Slightly

Total nonreal estate debt declined almost 30 percent between 1983 and the end of 1988. Nonreal estate debt levels are expected to increase slightly in 1989, following a decrease of less than 1 percent in 1988. Again, pending FmHA writeoffs cloud the debt forecast picture. Excluding the anticipated FmHA reduction, loan balances held by other lenders are expected to increase over 6 percent. While the improved financial position of farmers and advanced Government program payments have lessened the demand for operating loans, the farm sector's machinery complement continues to age. While farmers' current cash position would appear to permit internal financing of a substantial portion of capital replacement expenditures, a significant increase in machinery purchases would likely raise the demand for loans from commercial banks, Production Credit Associations, and individuals and others (through farm machinery financing corporations).

Commercial banks continue to be the primary nonreal estate debt source. While bank nonreal estate loans increased almost 3 percent during 1988, at year's end they stood at only 75 percent of the 1984 peak. The decline has been due partially to banks placing real estate mortgages to secure operating and machinery loans, and therefore reporting as real estate debt loans made for nonreal estate purposes. Bank nonreal estate debt is expected to increase over 4 percent in 1989, mainly due to increasing demand for loans to finance machinery purchases. Also, the improving agricultural economy decreases the importance of obtaining all possible security for loans to farmers.

The nonreal estate debt owed to the Farm Credit System, the sum of Production Credit Association (PCA) loans and Federal Intermediate Credit Bank (FICB) loans through other financial institutions, fell almost 58 percent from 1982 through the end of 1988. The overall improvement of the condition of the Farm Credit System, coupled with the newly formed Agricultural Credit Associations (merged Production Credit Associations and Federal Land Bank Associations)

offering loans at competitive terms, should enhance the viability of the Farm Credit System as a short- and intermediate-term farm lender. FCS nonreal estate debt is forecast to increase over 11 percent during 1989, due mainly to the return of borrowers who defaulted to other sources of financing during the mid-1980's.

The rate of decrease of FmHA nonreal estate debt was almost 9 percent in 1988, and should accelerate considerably in 1989 as FmHA steps up debt writeoffs. Assuming that half of the potential \$6-billion losses on FmHA nonreal

estate loan delinquencies are recorded in 1989, FmHA debt by the end of the year will decline almost 25 percent. Outstanding debt reported by FmHA could be further reduced by success of the Agency's changing emphasis from programs issuing loans directly to farmers to those guaranteeing loans made by other lenders, principally commercial banks.

Nonreal estate debt owed to individuals and others increased almost 8 percent in 1988, following a decline of over 10 percent in 1987. From 1982 through the end of 1987, nonreal estate debt of individuals and others fell by almost 43 percent. However, a reversal of this trend should continue through 1989, as farm machinery financing corporations' loans for the purchase of new machinery and equipment increase by as much as 20 percent. This may be offset by the continuing payoff of Small Business Administration agricultural loans and reduced demand for merchant and dealer financing of purchased inputs.

Lender Market Shares Shift

Total farm business debt decreased more than 28 percent between 1983 and the end of 1988. The \$55-billion reduction was not evenly distributed among all lenders (table 4). In 1987, commercial banks surpassed the Farm Credit System as the principal holder of combined real estate and nonreal estate farm debt. The FCS' market share fell from 34 percent of all debt in 1982 to 27.6 percent in 1989. While increasing loan balances by 1 percent over the same period,

Table 4--Distribution of debt, excluding operator households, by lender, December 31

Lender	1983	1985	1986	1987	1988P	1989F
Percent						
Real estate						
Federal Land Banks	43.0	42.2	39.3	37.0	36.6	37.3
Farmers Home Administration	8.3	9.8	10.7	11.4	11.5	10.6
Life insurance companies	11.3	11.3	11.5	11.4	11.5	12.1
Commercial banks	8.1	10.7	13.2	16.5	18.5	19.4
CCC storage facility	.8	.3	.1	.1	.0	.0
Individuals & others	28.5	25.8	25.1	23.6	21.8	20.5
Total	100.0	100.0	100.0	100.0	100.0	100.0
Nonreal estate						
Commercial banks	42.2	43.5	44.4	44.6	45.9	47.8
PCAs & FICBs	22.1	18.1	15.8	15.0	14.0	15.6
Farmers Home Administration	14.6	19.0	21.6	22.8	20.9	16.0
Individuals & others	21.1	19.4	18.2	17.6	19.1	20.7
Total	100.0	100.0	100.0	100.0	100.0	100.0
Combined						
Farm Credit System	33.4	31.5	29.2	27.4	26.5	27.6
Farmers Home Administration	11.2	13.8	15.4	16.4	15.7	13.0
Life insurance companies	6.1	6.3	6.6	6.5	6.4	6.7
Commercial banks	23.6	25.2	26.6	28.7	30.8	32.0
CCC storage facility	.5	.2	.1	.0	.0	.0
Individuals & others	25.1	23.0	22.1	21.0	20.6	20.6
Total	100.0	100.0	100.0	100.0	100.0	100.0

commercial banks' market share rose from 22.1 percent to 32 percent.

Agricultural Credit Act provisions to assist the FCS should become fully operational during 1989. The FCS, revamped and more competitive, could begin to recover its former farm lending preeminence. Farm Credit Banks, created by mergers of Federal Land Banks and Federal Intermediate Credit Banks, should serve to integrate management of real estate and nonreal estate lending functions. Agricultural Credit Associations, formed by merging geographically compatible Federal Land Bank Associations and Production Credit Asso-

ciations, will have direct lending authority within their respective service areas. FCS loan growth will depend on the return of former borrowers and on buyers' response to favorable loan terms on sales of land from the inventory of previous foreclosures.

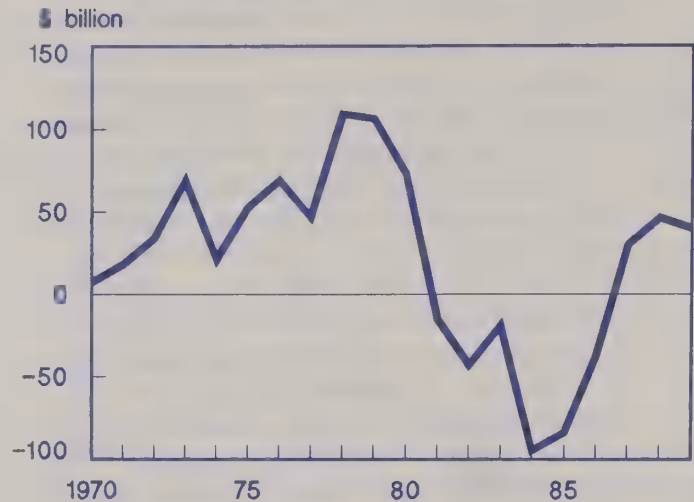
FmHA's share of total debt increased from 11.2 percent in 1982 to over 16 percent by the end of 1987, due mainly to legal prohibitions to initiate collection actions against delinquent borrowers. As reported losses increase from \$2.1 billion in fiscal 1988 to an estimated \$4 billion in fiscal 1989, FmHA market share will decline to 13 percent. Potentially more aggressive loan restructuring and writeoffs, and the shifting of program emphasis to guaranteed loans, may further reduce FmHA shares of both real estate and nonreal estate debt significantly.

Federal Land Banks continue to be the principal source of farm real estate credit, despite a loss of market share from 43.7 percent in 1984 to 37 percent in 1988. Individuals and others remain the second largest real estate lender, though their market share has declined over 8 percentage points since 1982, and now account for about 21 percent of real estate debt. While life insurance companies' share of debt has remained fairly stable in the 11- to 12-percent range, commercial banks have experienced an increasing share of farmland debt owed by farmers. These general trends in market shares are expected to continue through 1989, with commercial bank, Farm Credit System, and life insurance company shares increasing, while those of FmHA and individuals and others decrease again.

FmHA's share of nonreal estate loans increased from less than 15 percent in 1982 to peak at almost 23 percent in 1987, then declined to less than 21 percent in 1988, and is expected to decrease to less than 16 percent by the end of 1989. All other lenders are expected to increase market share in 1989, because the FmHA's 5-percent decrease is forecast to be distributed relatively evenly among competing lenders. Commercial banks' share of nonreal estate debt increased from 39.5 percent to almost 46 percent between 1982 and 1988.

Figure 15

Annual Change in Farm Business Equity



These earlier gains resulted largely from PCA/FICB reductions, as the Farm Credit System share of nonreal estate debt

decreased from 23.6 percent in 1982 to 14 percent in 1988. FCS' share is expected to recover to almost 16 percent by the end of 1989. The share of individuals and others will increase from 18 percent in 1987 to nearly 21 percent at the end of 1989, following a decline of over 4 percentage points between 1982 and 1987.

Equity Continues Rising

Farm business equity increased for the second consecutive year, gaining over \$46 billion during 1988 (figure 15). Due principally to rising real estate values, total assets increased

almost 6 percent. This increase, coupled with the 3-percent decline in debt, produced a net equity gain of over 8 percent. Continuing increases in asset values and a relatively stable aggregate debt level are expected to increase equity more than 6 percent in 1989, a gain of \$40 billion. Unfortunately, these 2 years of gain followed 6 consecutive years of loss. The recent gains recover only a fraction of the \$293-billion equity loss experienced between the 1980 peak and the 1986 bottom. While those farmers beginning or rapidly expanding during the early 1980's have undoubtedly incurred very real cash losses, changes in equity are largely in the form of unrealized capital gains and losses. The recent gains can be interpreted as reflecting improving expectations of longer term profitability of the sector.

Financial Ratios, Returns, and Cash Flow

Financial ratios designed to measure liquidity, solvency, profitability, and financial efficiency suggest continued improvement in the farm sector's financial position, especially compared to the early 1980's (appendix table 8). However, the financial picture is less clear when 1988 is

Table 5--Balance sheet of the farming sector 1/

Year	Current dollars			Deflated dollars (\$1982) 2/		
	Assets	Liabilities	Equity	Assets	Liabilities	Equity
	Billion dollars					
1980-84	949.6	184.4	765.1	976.3	188.1	788.2
1985-86	720.3	165.3	555.1	641.3	147.2	494.1
1987	709.2	142.7	566.6	602.6	121.2	481.4
1988F	751	138	613	617	113	503
1989F	785 to 795	134 to 142	648 to 658	620 to 630	106 to 114	510 to 520

F = Forecast. 1/ Excludes operator households and CCC commodity loans. 2/ Deflated by the GNP implicit price deflator, 1982 = 100.

compared with 1987. Although both solvency ratios (debt/asset and debt/equity) improved over 1987, and are expected to fall further in 1989, the liquidity and financial leverage ratios gave mixed results. Some suggest an improved financial position for the sector, others indicate some deterioration. All profitability ratios fell in 1988 but are expected to rise in 1989.

Debt/asset ratios improved for the third consecutive year during 1988. Higher land values and lower real estate debt reduced the real estate debt/asset ratio to 13.8 percent from the 1985 peak of 17.5 percent. With land values projected to increase 7 to 9 percent and debt expected to be unchanged, this ratio is forecast to decline to less than 13 percent by the end of 1989, a level comparable to that of the 1970-71 pre-

boom era. Improved cattle and crop prices resulted in higher yearend inventory values despite the decline in inventory quantities. These higher nonreal estate asset values combined with virtually unchanged debt levels produce a non-real estate debt/asset ratio of 31 percent, continuing the decline in this ratio from its peak at 42.8 percent in 1983.

Farm Sector Returns Rise

Changes in farm asset values, returns, and cash flow continue to yield high rates of return to farm assets and equity and to improve farmers' debt servicing ability, especially relative to the early 1980's. However, as farm asset and equity values rose faster than returns to farm assets and to farm equity, the rates of return from current income on farm assets and on farm equity fell from 5.2 percent and 3.9 percent in 1987 to 4.0 and 2.4 percent, respectively. Both are expected to rise somewhat in 1989 (4 to 6 and 3 to 4 percent, respectively). The total real rate of return on farm assets, including returns from current income and real capital gains, is expected to fall from 4.9 percent in 1987 to 0.5 percent in 1988, and to rise to 1 to 2 percent in 1989 (table 6).

Returns to operators and residual income to farm assets and to equity in 1988 fell from 1987 levels, but are expected to rise in 1989 due to higher crop production to replace inventory drawdowns which will more than offset the expected growth in production expenses. In 1988, returns to farm assets from current income likely fell by nearly \$8 billion from a record high of \$37 billion in 1987, and are expected to rise \$8 to \$12 billion in 1989 (table 7). The debt-to-returns-to-farm-assets ratio is expected to rise from 3.9 in 1987 to 4.7 in 1988 but fall below the 1987 level in 1989.

Table 6--Rates of return on farm assets and equity 1/

Year	Returns to assets			Returns to equity		
	Income	Real capital gains	Total	Income	Real capital gains	Total
	Percent					
1981-83	1.5	-5.8	-4.2	-.7	-5.8	-6.4
1984-86	3.5	-11.8	-8.4	1.5	-14.3	-12.8
1987	5.2	-.3	4.9	3.9	.8	4.7
1988F	4.0	-3.6	.5	2.4	-3.5	-1.0
1989F	4 to 6	-3 to -4	1 to 2	3 to 4	-3 to -4	0 to 1

F = Forecast. 1/ Excludes operator households. Totals may not add due to rounding. Returns to assets and equity are calculated using the average of the current and previous year's assets and equity, respectively.

Table 7--Returns to assets and equity 1/

Income and Returns	1981	1982	1983	1984	1985	1986	1987	1988F	1989F
	Billion 1982 dollars								
Gross farm income	164	151	135	151	140	132	137	136	140 to 144
Returns to operators	22	17	7	25	25	29	36	32	36 to 38
Residual income to farm assets	20	19	8	24	25	26	31	24	29 to 31
Residual income to equity	0	-2	-12	5	8	12	19	12	17 to 19

F = Forecast. 1/ Excludes operator households.

Table 8--Flow of funds to the farm sector, 1981-1989F

Income and Returns	1981	1982	1983	1984	1985	1986	1987	1988F	1989F
	Billion 1982 dollars								
Gross cash income	155	151	145	144	141	133	136	140	135 to 139
Plus: Change in loans outstanding	16	7	3	-2	-14	-17	-11	-4	0 to 1
Plus: Net rent to nonoperator landlords	7	6	5	8	7	6	6	6	5 to 7
Plus: Net change in farmers' currency and demand deposits	*	*	*	*	1	1	*	*	0 to 1
Minus: Gross cash expenses (excluding interest)	100	92	89	89	83	74	75	81	79 to 83
Minus: Capital expenditures	18	13	12	12	9	7	8	9	8 to 10
Equals: Cash flow before interest payments	61	59	51	50	43	41	48	54	53 to 55
Minus: Interest payments	20	21	20	19	16	14	13	12	11 to 13
Equals: Cash flow after interest payments	40	38	31	31	27	27	35	41	40 to 42

F = Forecast. * = less than + \$.5 billion. Numbers may not add due to rounding.

The total real rates of return measures of profitability and the "spread" include the real capital gains component of total returns. The spread is the total real return on assets minus the real cost of debt. It rose from -11.9 percent in 1986 to -0.6 percent in 1987. The spread is expected to be -6.2 percent in 1988 and -5 to -6 percent in 1989. This suggests that debt financing was becoming somewhat less profitable for the farm sector as a whole in 1988 and 1989 than in 1987. However, debt financing is still considerably more profitable than it was in the mid-1980's, when the spread ranged from about -10 to -18 percent.

Cash Flow

Cash flow after interest (\$1982) in 1988 was \$41 billion and is expected to be about the same in 1989, compared with the 1984-87 average of \$30 billion. Growth in real cash flow after interest since the mid-1980's reflects stable capital expenditures, lower interest expenses, and decreased net loan repayments. The debt/net cash flow ratio fell from 3.4 in 1987 to 2.8 in 1988, but may fall slightly in 1989.

Improved farm financial management practices and strengthening market fundamentals underlie the farm sector's recovery from its early-1980's slump.

General Economy

First-quarter statistics suggest the general economy is slowing. Industrial production grew a meager .2 percent at an annual rate in the first 4 months of the year, and capacity utilization fell continuously February through April. The civilian unemployment rate rose to 5.3 percent in April, as the number of nonfarm payroll jobs showed their lowest monthly gain since mid-1986. The slowing economy is largely the result of tighter Federal Reserve policy taken to

ward off the possibility of an overheating, inflationary economy.

At first glance, inflation seems to be stubbornly high. Producer prices rose 10.2 percent at an annual rate in the first quarter, compared with a 3-percent rise in the fourth quarter of 1988. Consumer prices rose 6.1 percent at an annual rate in the first quarter, compared with 4.4 percent in 1988.

The developments in the first 4 months of 1989 have some analysts expecting a recession in the next few months. That prediction seems somewhat premature for two main reasons. First, there appears to be substantial underlying economic strength, especially in business spending for new plants and equipment. A survey of planned plant and equipment spending taken in the first 3 months of the year suggests about 6 percent growth in real terms for 1989, faster growth than a year earlier. And inflation-adjusted exports during first-quarter 1989 are 10 percent ahead of first-quarter 1988.

Second, the increase in inflation appears mostly due to the run-up in crude oil prices and food price increases related to the effects of the 1988 drought. For example, finished energy goods prices at the producer level rose 38 percent at an annual rate in the first quarter, compared with 2.1 percent in the fourth. Finished food prices at the producer level rose 13.5 percent in the first quarter, compared with a 2.1-percent increase in the fourth.

These two factors do not reflect an overheating economy, but unusual—and likely temporary—developments in the supply for oil and agricultural commodities. Because there is little the Federal Reserve can do about commodity supply developments, it is unlikely that they will continue to force up interest rates in the near term.

A much more likely possibility is one or two quarters of slow real GNP growth, followed by a resumption of nearly 3-percent real GNP growth in the second half of 1989. Barring continued acceleration in food and oil prices, overall inflation is likely to return to its underlying rate—around 4 to 4.5 percent. Excluding food and energy prices, consumer prices have averaged about 4.2-percent increases annually since 1982.

Lower real growth, a stable inflation rate, and no further monetary tightening are likely to allow interest rates to fall in the second half of the year. Falling interest rates should

put downward pressure on the dollar, which could boost exports somewhat toward the end of the year.

There are two main risks in this outlook. First, a continued acceleration in food or energy prices could force the Federal Reserve to tighten further to keep inflation from becoming embedded in wages—trying to avoid a wage-price spiral. Even without Federal Reserve tightening, a continued acceleration in food or energy prices could keep nominal interest rates high.

Special Topics in Farm Income Estimation

by
Roger Strickland and Robert Williams ^{1/}

Abstract: USDA farm income estimates are primary indicators of the economic situation in the farm sector. Most components on the receipt side of the income accounts are self explanatory and straightforward in their estimation. Items like minor commodities and the net values of on-farm consumption of food and housing are not as straightforward. This article looks at these three income components and explains USDA's current estimating procedures.

Keywords: Net farm income, minor commodity receipts, net rental values.

Cash Receipts for Minor Commodities

Total cash receipts are the sum of individual commodities' estimated cash receipts and are components of the bottom-line net farm income measure. Data quantity and quality for estimating these receipts vary considerably.

Cash receipts are estimated for over 80 commodities for which no production and market data are systematically reported. These commodities made up more than 20 percent (\$10.4 billion) of net farm income in 1987. Omissions, inclusions, and inaccuracies in these receipts have a direct impact on net farm income because receipts are derived independently of production expenses. Omission of receipts for a commodity in a State does not mean that the expenses associated with that production are also omitted.

Commodities are classified as either major or minor according to their relative importance as measured by value of production at the national level. A major commodity is one which ranks high in value of production. Published data are

available for these crop and livestock commodities if they are in a major producing State. Data are gathered from surveys designed to yield statistically reliable estimates. In contrast, little data are available for many minor commodities or in States which produce minor quantities of major commodities. Neglecting the cash receipts for these States and commodities would result in an underestimation of net farm income.

ERS works with the State offices of USDA's National Agricultural Statistics Service (NASS) to estimate, where possible, cash receipts of commodities and minor quantities in States that are not part of USDA's national data collection and publication process. The State offices are requested to provide commodity-specific data, if possible, but some data are aggregated into miscellaneous groups. Some States conduct surveys for specific commodities with support from the local government and producers. However, much of the data do not consist of statistically-reliable estimates for minor commodities based on a State survey program.

Unpublished data are the primary source for estimating cash receipts for the minor commodities, within which the three

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Table A-1--Total U.S. cash receipts with proportions derived from unpublished data sources, 1978 and 1987

Commodity group	Year	Total cash receipts	Unpublished sources	
			Value	Proportion of total
		Million dollars		Percent
Poultry/Eggs	1978	8,110	170	2.1
	1987	11,487	319	2.8
Misc. Livestock	1978	873	697	79.7
	1987	2,187	1,951	89.2
Oil crops	1978	13,023	0	.0
	1987	10,800	8	.1
Vegetables	1978	6,127	725	11.8
	1987	9,223	2,623	28.4
Fruits/Nuts	1978	5,764	165	2.9
	1987	7,869	339	4.3
Commodities with all published data 1/	1978	73,587	0	.0
	1987	86,870	0	.0
All other crops	1978	4,876	350	7.2
	1987	9,658	5,129	53.1
TOTAL	1978	112,360	2,106	1.9
	1987	138,094	10,374	7.5

1/ Meat animals, dairy products, food grains, feed grains, cotton, and tobacco groups have no cash receipts derived from unpublished data.

Secondly, the risks of a round of protectionist actions and counter-actions are rising as the Federal Government complies with the provisions of last year's Omnibus Trade Act. At the least, the act requires the identification of countries who engage in unfair trading practices and a decision about what kinds of action, if any, will be taken against such countries. If the actions set off a retaliatory response on the part of other countries, U.S. export growth will slide and slow the economy further.

Despite these risks, the most probable scenario is one that is mildly supportive for agriculture throughout 1989 and possibly into 1990. Under the most likely scenario, the sector could be seeing falling interest rates, a slightly lower dollar in international markets, and continued domestic demand support through personal income growth in the 6.5- to 7.5-percent range.

principal aggregate categories are: all other crops, vegetables, and miscellaneous livestock (table A-1). The dollar \$10.4 billion in 1987 (393 percent). During the same period, cash receipts from all sources increased only 22 percent.

All other crops

This group accounted for \$5.2 billion in 1987 or half the total of all the receipts from unpublished data sources. Just one category, ornamental plants, accounted for \$4.3 billion of this group's total. Cash receipts for ornamental plants fall under the category of greenhouse and nursery, which has two components: floriculture and other ornamentals. Flori-

culture cash receipts are published annually by NASS in the Floriculture Crops report covering cut flowers, potted flowering plants, foliage plants, bedding plants, and cut cultivated greens. Other ornamentals data are provided by the State offices as part of the minor commodities report.

Cash receipts from sales of greenhouse and nursery products (from both published and unpublished sources) increased from \$2.6 billion in 1978 to \$6.4 billion in 1987. Over the same period, receipts for "other ornamentals" increased from \$1.4 billion to \$4.3 billion. If these receipts from the unpublished ornamentals had been omitted from gross farm income calculations, net farm income would have been nearly 10 percent lower in 1987. Rapid growth has occurred in the marketing of nursery products not reported as a part of floriculture estimates.

Vegetables

Unpublished data are used to compute cash receipts for more than 80 types of vegetables. Numerous minor vegetables, like parsley, Chinese peas, pimentos, shallots, and leeks, are grown only in a few States and for limited markets. NASS sharply reduced its data collection and reporting system for the vegetable and melon programs in 1982 to stay within its appropriated funding level.^{2/} Some of the commodities dropped, such as watermelons, cantaloupes, and green peppers, involved substantial receipts, though they were small in comparison to major field crops.

Miscellaneous livestock

Receipts from unpublished sources for miscellaneous livestock nearly tripled from \$697 million in 1978 to \$2 billion in 1987. Twenty-five percent (\$540 million) of the 1987 miscellaneous livestock receipts were from sales of horses in Kentucky, the only State to report horse sales. Horse farms are prevalent in Kentucky and a producer association assists NASS in developing the receipts. Cooperation of producer groups is often essential to having a credible estimate when no USDA survey exists.

Miscellaneous livestock is a diverse group, including such exotic items as musk ox, reindeer, llamas, alligators, tropical fish, and Angora goats. It includes furbearers, and also aquatic products such as crawfish, shrimp, catfish, baitfish, and worms for bait.

Among the unpublished commodities, catfish has been second only to horses in value of production and may well be the leader in rate of growth. Catfish receipts are underestimated for recent years because Arkansas is the only State to have provided a separate figure for catfish sales. NASS

^{2/} Vegetables: Estimates by Seasonal Groups and States, 1978-82. Crop Reporting Board, Statistical Reporting Service, U.S. Department of Agriculture. Statistical Bulletin No. 728. June 1985, Washington, D.C., p. 2.

Table A-2--State cash receipts with proportions derived from unpublished data sources, 1987

State	Total cash receipts	From unpublished sources		State	Total cash receipts	From unpublished sources	
		Value	Proportion			Value	Proportion
	Million dollars		Percent		Million dollars		Percent
Alabama	2,148	225	10.5	Montana	1,347	33	2.4
Alaska	29	17	57.1	Nebraska	6,823	65	.9
Arizona	1,781	307	17.2	Nevada	243	12	4.9
Arkansas	3,143	116	3.7	New Hampshire	104	28	27.3
California	15,522	1,901	12.2	New Jersey	563	261	46.3
Colorado	3,191	68	2.1	New Mexico	1,147	113	9.9
Connecticut	366	102	27.9	New York	2,527	323	12.8
Delaware	485	46	9.5	North Carolina	3,715	329	8.9
Florida	5,227	1,073	20.5	North Dakota	2,308	56	2.4
Georgia	3,087	325	10.5	Ohio	3,422	155	4.5
Hawaii	559	50	9.0	Oklahoma	2,752	187	6.8
Idaho	2,047	122	6.0	Oregon	1,861	491	26.4
Illinois	6,174	23	.4	Pennsylvania	3,224	282	8.8
Indiana	3,872	154	4.0	Rhode Island	75	61	80.9
Iowa	8,780	70	.8	South Carolina	931	60	6.4
Kansas	5,722	73	1.3	South Dakota	2,723	37	1.4
Kentucky	2,419	624	25.8	Tennessee	1,933	208	10.8
Louisiana	1,420	111	7.8	Texas	9,086	600	6.6
Maine	413	61	14.8	Utah	596	45	7.6
Maryland	1,128	220	19.5	Vermont	412	20	4.8
Massachusetts	393	122	31.0	Virginia	1,692	127	7.5
Michigan	2,504	202	8.1	Washington	2,841	210	7.4
Minnesota	5,809	104	1.8	West Virginia	221	14	6.1
Mississippi	1,979	230	11.6	Wisconsin	5,017	182	3.6
Missouri	3,691	124	3.4	Wyoming	642	7	1.1
				U.S. Total	138,094	10,374	7.5

recently began publishing a catfish report with figures for production and sales for the major producing States. This publication will both remove catfish from the list of unpublished commodities and substantially increase the receipts included in net farm income.

States

Cash receipts based on unpublished data exceeded 10 percent of the State's total receipts in 18 States in 1987 (table A-2). In nine States, the share exceeded 20 percent and was as high as 81 percent in Rhode Island.

There is a cluster of States in the Northeast with high percentages, including New Jersey (46 percent), Rhode Island (81 percent), Connecticut (28 percent), Massachusetts (31 percent), and New Hampshire (27 percent). Vegetables and truck crops destined for nearby metropolitan areas account for the bulk of these receipts.

Oregon (26 percent) and Florida (21 percent) have a large percentage of their receipts from a diverse assortment of minor commodities. For livestock, Oregon reports receipts for rabbits, mink, and beeswax, while Florida reports receipts for alligators, tropical fish, squabs, worms, and catfish. Oregon reports receipts for numerous seed crops, while Florida reports large receipts for other ornamental crops. Florida, with \$1.1 billion in receipts from unpublished data, was second only to California's \$1.9 billion.

Accuracy of Receipts from Unpublished Data Sources

Inaccuracies exist in receipts based on unpublished data that do not pass rigorous statistical tests applied to the survey instruments used in the major producing States for the principal commodities. The appropriate test, and the one applied in these cases, is the subjective judgment as to whether inclusion of the estimates introduces more error than their omission. In calculating net farm income the difference between gross income and production expenses, all appropriate components of both are implicitly assumed to have been estimated and included.

Housing and On-Farm Consumption of Food

The net value of all goods and services produced by the sector must account for the food and housing produced and consumed by people within the sector. However, there are no observable market transactions for these goods. Data availability and quality dictate the accounting approach utilized for these nonmarket transactions. The primary objective in deriving the net value of production for this food and housing is to ensure that it is incorporated in net farm income, the "bottom line."

Food

In the case of a steer produced and slaughtered for home consumption by the farm family, net farm income should reflect only the net value above the production expenses. A realistic value of the steer can be easily inferred using market price for a comparable animal. Quality estimates of produc-

tion expenses for producing all steers can be derived from farmer surveys.

Farmers do not keep separate records for the steer intended for home consumption versus the steer intended for sale. To ask the farmer to make a subjective partitioning of his documented expenditures into those for animals destined for commercial markets and those used on the farm would increase the respondent burden and degrade the data quality.

The current accounting model includes the value of the steer consumed on the farm in the noncash section of gross income. The expenses of producing that steer are included in the production expenses. Thus, when total production expenses are deducted from gross income, only the net value of production realized from the steer remains in net farm income.

The home consumption account is defined to include the gross value of the products, in this case, the market value of the steer. There is no substantive need in economic and farm policy analysis for knowing the net value of the steer; to determine the net value would require much work and

reduce the quality and confidence in many data series. An imputation would have to be made for the value of all inputs involved in the production of the commodities consumed by the farm family and adjustments made to each affected production expense series.

Housing

Net farm income reflects the net value of all goods and services produced on farms; and such, includes the value of housing services received by farm operators from residences on farms. Returns to operators reflect the net value of goods and services associated with the farm business, and thus exclude the operators' residences (table A-3). The difference in value between the two measures reflects the imputed net rental value of those operators' residences on farms.

In arriving at the net value of operators' housing services—e.g., imputed net rent—expenses associated with the farmer's house are included in various components of production expenses. The gross value of the rental services is included in the imputed rental value component of the non-cash income section of gross income. As with food, only the net value of the housing services produced by the sector remains in net farm income after total production expenses are subtracted from gross income.

As in the case with expenses incurred in producing food consumed on the farm, there are virtually no quality data available regarding the expenses associated with operator residences separate from that of other buildings and farm expenses. Expenses for depreciation, taxes, insurance, etc., related to those dwellings are thus included in the production expense accounts.

Inclusion of these expenses are inappropriate for net farm income and have to be eliminated. The quantity and quality of data available for operator dwellings are much less than that for all farm buildings. Rather than degrade the production expense estimates, which are quality time-series data useful for analyses, by making adjustment for dwellings, the separate estimates of dwelling expenses are included as a component of gross imputed rental value to offset their inclusion in the production expenses. The dwelling expenses are thus "washed out" of the net farm income accounts without the need to make adjustments to the survey-based expense estimates.

In arriving at the net imputed rental value reflected in net farm income, the following accounting model is utilized:

Table A-3--U.S. Department of Agriculture farm income series

Net farm income 1/	Production transactions 2/
Sum of--	Gross income--
Gross cash income:	Gross cash income:
Cash receipts	Cash receipts
Direct Government payments	Direct Government payments
Farm-related income	Farm-related income
Noncash income	Noncash income
Home consumption of farm products	Home consumption of farm products
Gross imputed rental value of all dwellings	Gross imputed rental value of laborers' dwellings
Value of net change in inventories	Value of net change in inventories
Less--	Dispositions--
Cash expenses 1/	Factor payments to nonoperators 2/
Intermediate product expenses	Interest
Property taxes	Cash wages to hired labor
Interest	Contract labor
Cash wages to hired labor	Perequisites to hired labor
Contract labor	Net rent to nonoperator landlords 3/
Net rent to nonoperator landlords 3/	
Capital consumption 1/	Other payments 2/
Depreciation	Intermediate product expenses
Casualty losses	Property taxes
Perquisites to hired labor	Capital consumption
	Depreciation
	Accidental damage
	Returns to operators

1/ Includes income and expense components related to operator dwellings. 2/ Excludes income and expense components related to operator dwellings. 3/ Includes value of share rent paid in kind.

Gross income:
Imputed rent on
operator dwellings

i x value
depreciation
taxes
insurance

Production expenses
included within
component accounts

i x real estate debt
depreciation (all dwellings)
taxes (all real estate)
insurance (all dwellings)

where i = the average interest rate on all farm mortgages

The dwelling's value is composed of the owner's equity plus the debt incurred on the mortgage. Thus, the only portion reflected in net farm income after total production expenses are subtracted from gross income is the "i x equity" component. The "i x debt" component is a payment to the nonfarm sector and would be reflected in the U.S. Department of Commerce's (USDC) accounting for the nonfarm sector. The USDA net farm income reflects the net value of housing services rendered by the farm sector's assets. USDC's national income estimate, inclusive of the farm sector, reflects the net value of all services produced by the dwelling.

Few data are collected regarding the market or economic value of farm dwellings or the housing services produced by those dwellings. One quarter of all farms are responsible for almost all of the Nation's agricultural production, and even on those farms the attributes of the houses are not pertinent to the production of commodities or the cost of Government programs.

Given this situation, imputation of the rent requires employing basic logic and concepts applicable to the data that are available. First, among the basic concepts applied is the assumption that services produced are a function of services consumed. Second, a vacant dwelling renders no services. Third, a dwelling would not be occupied if it rendered no service; therefore, the value of the service must be greater than zero. Fourth, the measure employed must reflect only the market value of services produced and be free of capital gains considerations.^{3/}

Because so little is known about the housing market in rural areas, the concept of opportunity costs has to be the foundation of the imputed rental value account. The critical element in this estimation process involves applying an appropriate interest rate against the sector's equity in the

^{3/} As a measure of the net value of production occurring within a calendar year, inclusion of changes in value of assets existing at the beginning of the year is not appropriate and every effort is made to exclude these effects in all components of the accounts. An example is the use of the value-of-the-change concept rather than the change-in-value concept in the commodity inventories component of gross income.

Table A-4--Imputation of gross imputed rental value, 1984-87

Item	1984	1985	1986	1987
Percent				
Interest rate (i)	9.8	9.5	9.1	9.0
Million dollars				
Dwelling value	61,875	53,767	47,826	43,946
i x value	6,040	5,102	4,352	3,933
Depreciation and accidental damage	4,287	3,914	3,607	3,381
Real estate taxes	283	295	285	307
Net insurance	925	912	876	934
Gross rental value	11,535	10,223	9,131	8,556

Table A-5--Imputed gross rental value as a proportion of returns to operators, 1984-87

Year	Returns to operators	Imputed rent	Rent to returns
Million dollars			Percent
1984	26,418	11,535	43.7
1985	27,403	10,223	37.3
1986	33,371	9,131	27.4
1987	42,500	8,556	20.1
Average	-----	-----	30.4

account. Expenditures for taxes, insurance, and interest on the debt are real transactions. Determination of depreciation, while not a market transaction, is a well-defined process.

Market interest rates reflect lenders' and debtors' perceptions of many factors, current and future, including future inflation and capital gains. The rate must be free of capital gains considerations. It must also be a rate appropriate to the individual investor and not a lender's rate. For the farmers, the opportunity cost is what they as individuals could get if the house were sold and the equity invested. For example, a mortgage rate, such as the one currently used, represents a mark-up over what the individual saver/investor received.

In table A-4, the interest rate, dwelling values, and other components of the gross imputed rental value account are given for the most recent 4 years. In table A-5, the ratio of the gross imputed rental value to return to operators is derived. Returns to operators are equivalent to net farm income excluding the income and expense components for operator dwellings. The accounting model for returns to operator is in table A-3. The component accounts are defined differently, in addition to the inclusion or omission of operators' dwellings, but returns to operator is the net value of production, i.e., income derived from production activities.

Little is known about houses on farms so it is difficult to make an absolute evaluation of either the gross or net imputed rental values. Gross expenditures are a poor indicator of value of services received, because a rational consumer wouldn't expend the money unless services having a comparable value were provided.

The ratio of the gross value of housing services consumed to income derived from production activities gives another perspective of the reasonableness of the estimates, because a comparison can be made with the housing component of the consumer price index (CPI). In the "urban wage earners and clerical workers" version of the CPI, housing—including repairs, utilities, and furnishings—received a 41-percent share of the consumer's dollar in 1987 (2). In comparison to that nonfarm indicator, the ratios of gross imputed rental value to returns to operator shown in table A-5 do not appear unreasonably high. Returns to operators are the income derived from the farm business.

Limitations

There are two major issues in the current estimation methods that need to be addressed. One is the interest rate most appropriate for the farmers' equity in their dwellings, which is about 85 percent of the value of the dwellings. The use of a mortgage rate, as is currently done, may be too high. The opportunity cost to the farmer may be more in line with a saver/investor rate, which is probably at least 2 percentage points less than a mortgage rate.

A second key issue is the valuation of operator dwellings in recent years. The current estimation procedure relies on dwellings to real-estate-value relationships established in the 1969 and 1979 Farm Finance Follow-on Surveys to the U.S. Census of Agriculture. The dwelling values are a function of real estate values, and the substantial drop since 1980 in the dwelling values is driven by the dramatic decline in farmland values.

A drop of this magnitude would appear to be unrealistic. As previously mentioned, one quarter of all farms account for almost all of the production of agricultural commodities. The reciprocal is that three-quarters of all farmers are not dependent on farming as their primary source of income. A decline in land prices due to stress in farming does not automatically mean that a majority of the households participating in the sector suffer a proportionate decline in incomes and asset values.

If three-quarters of all farmers earn most of their income from nonfarm employment, the implication is that they reside in nonfarm employment centers, e.g., metropolitan areas. Therefore, the value of their houses would also be influenced by local nonfarm housing market conditions. There are no indications of a general decline in housing prices in metro-

politan areas in recent years. If any significant change has occurred, it may have been up.

Future Improvements

Significant new data regarding the value of on-farm dwellings and the occupation of the occupants will become available over the next 2 years. The data from the 1987 Agricultural Census is being released this year. The Agricultural Economics and Land Ownership Survey, a follow-on to the Agricultural Census, is being conducted in 1989 and the data should be available in 1990. The Farm Costs and Returns Survey has recently expanded its coverage of

dwellings and will be a key source of annual data critical to computing imputed rents.

Plans are to implement improvements and revisions, if any, in data and estimation procedures in 1991 with the release of the 1990 estimates in the national and State issues of the *Economic Indicators of the Farm Sector* series. If subsequent study leads to the conclusion that another interest rate is more appropriate for the opportunity cost of the equity capital in dwellings, that change will be made simultaneously with the data regarding dwellings.

It may be useful to put possible future revisions in some perspective with a hypothetical example. Assume for convenience that 1987 dwelling values did not decline significantly and leveled off at the 1984 value and that the appropriate opportunity cost for equity capital (85 percent of dwelling value) was 7 percent, the mortgage rate less 2 percent. The revised imputed net rental value would be roughly \$340 million higher, and net farm income would also undergo a revision comparable to the change in net imputed rental value.

Obviously, the numbers in the above example are hypothetical but do serve to indicate that revisions to net farm income, which was \$46 billion in 1987, could well be relatively minor. This is despite the fact that the example contains some large percentage changes to data used in the imputed rent account. In addition, net farm income is the only income indicator published by ERS that would be affected by revisions to the imputed rent.

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Borrower Rights Legislation in Response to Farm Sector Financial Stress in the 1980's

by
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Abstract: Federal and State legislation was passed during the 1980's enhancing the legal rights of farm borrowers relative to farm lenders. The objective of this borrower rights legislation is to keep farmers on the farm by forestalling foreclosure or helping restore farm financial health. Such changes in the legal rights of farm lenders and borrowers do not come without costs borne by lenders and other borrowers.

Keywords: Borrower rights legislation, debt restructuring, Chapter 12, Farm Credit System, Farmers Home Administration.

The Federal and State Governments passed a range of legislation to alleviate farm sector financial stress in the mid-1980's. Borrower rights legislation was a major component, enhancing the contractual rights of farm borrowers relative to lenders. The ultimate objective of the legislation is to keep farmers on the farm by forestalling farm foreclosure or assisting farmers' recovery from burdensome debt. While often meeting these short-term objectives, the new laws could have a lasting impact on agricultural credit markets. Many of the new agricultural credit laws do not have expiration dates.

Perhaps most noteworthy among the new credit laws are rules requiring lenders to restructure a borrower's farm debt, often by writing down principal and interest. Also common are new rules giving farmers better ability to retain farm assets, particularly homesteads, after foreclosure. Some Federal legislation affects only borrowers of the Farm Credit System (FCS) and the Farmers Home Administration (FmHA), but State legislation usually affects any farm borrower or lender.

Federal Legislation

The Food Security Act of 1985 addressed the rights of FmHA borrowers. The Act placed limits on the time taken by FmHA to approve or disapprove loans and disburse loan money, required written notice of loan actions, provided new appeal mechanisms for adverse loan decisions, and allowed borrowers access to loan file information. The Act also introduced homestead protection rules to assist FmHA borrowers in reclaiming their farm homestead after it was acquired by FmHA. Borrowers were given the right to rent their farm homestead for up to 5 years, and the right to repurchase it after the rental agreement expires.

The Farm Credit Amendments Act of 1985 contained borrower rights rules for FCS. It required FCS institutions to

give borrowers complete and accurate information on loan interest rates and terms, access to FCS loan documents, and placed a borrower on FCS credit review committees.

All farmers and lenders were affected by borrower rights legislation when Chapter 12 was added to the U.S. Bankruptcy Code on November 26, 1986. The new bankruptcy chapter is unique since it is designed specifically for, and can be used only by, family-sized farmers (generally persons, corporations, or firms which received at least 50 percent of gross income from farming and whose total farm debt does not exceed \$ 1.5 million). All other businesses and individuals must use either Chapters 11 or 13 of the Code. Under these statutes, farmers had found it time-consuming and difficult to restructure their debts, making it hard to benefit from bankruptcy reorganization. A Chapter 12 case is expedited through the bankruptcy courts.

Most important among Chapter 12's provisions benefiting the borrower is the increased ability to develop debt restructuring plans that require their lenders to write down secured debt to the fair market value of the loan collateral as determined by appraisal. Farmers who borrowed heavily at peak land prices usually benefit the most from debt write-downs, while their lenders lose any claim to future appreciation in the farmland collateral. Without congressional action, the new bankruptcy code will expire on October 1, 1993.

The Agricultural Credit Act of 1987 furthered earlier rights given to FCS and FmHA borrowers. Stricter borrower notification requirements of loan actions and legal rights, and greater access to loan information were required by the act. But, most importantly the act required that both the FCS and FmHA implement mandatory debt restructuring policies and increased their borrowers' ability to retain farms lost through foreclosure.

For the FCS, each district was required to adopt policies calling for the restructuring of delinquent loans before foreclosure proceedings can begin. Loans must be restructured if

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such restructuring costs less than foreclosure. Restructuring can include reamortizations, deferrals, interest rate adjustments, and the writing down of loan principal and interest. Prior to the legislation many FCS districts had been aggressively restructuring loans on a voluntary basis.

Similar but more encompassing debt restructuring rules were required of FmHA by the 1987 Act. The new rules are part of a comprehensive five-phase loan servicing policy which has the objective of reducing high farmer program delinquencies, while keeping farmers on the farm at the lowest cost to the Government. The new policy places each farm borrower in a loan servicing phase, with specific servicing tools available to assist that farmer. In the early phases, servicing tools include rescheduling and reamortization, reduced interest rates, and payment deferral. If these are not sufficient in assisting the borrower, FmHA must write down debt to the Government's net recovery value of collateral (value FmHA would receive after liquidation costs are paid) to help the farmer service debt. All loan decisions must be made under strict deadlines and are subject to strong appeal rights.

If restructuring does not avoid foreclosure, both the FCS and FmHA must also give borrowers the right to lease or repurchase property that they acquire. FCS borrowers have the right to repurchase their lost farm at fair market value and the right of first refusal (the opportunity to match an offer made by another person) before the acquired farm can be sold or leased to another person.

FmHA borrowers have even greater rights. They have the right to lease lost property with an option to buy, or exercise homestead protection rights if the property contains the borrower's residence. Lost property can be repurchased at its net recovery value to the Government. Leaseback and buyback rights can be extended to immediate family members.

State Legislation

State Governments responded to the farm financial stress of the mid-1980's by also passing borrower rights legislation. Two common responses have been establishment of farm debt mediation programs and new farm foreclosure laws. States adopting such legislation have tended to be in the Midwest.

Farm foreclosure laws protect farm debtors by delaying lenders from collecting and disposing of loan collateral. This can be accomplished by extending the redemption period that allows the farmer to repurchase the lost property before the lender can sell it to another party. In some States, this redemption period is now a year or more. Like FmHA, some States have adopted special rules to help farmers retain their homesteads and a surrounding parcel of land. In addition, some States have granted farm borrowers the right of first refusal on farmland that was lost through foreclosure.

Farm foreclosure legislation is not unique to the mid-1980's. Some existing laws trace back to previous periods of farm financial stress. Widespread farm debt relief legislation was passed during the 1930's. From 1932 to 1934, 25 States passed farm foreclosure moratoriums, halting creditors from gaining possession of a farmer's land after default.

To help farmers avoid farm foreclosure, State legislation has set up farm loan mediation services. Under mediation, State appointed mediators bring the lender(s) and the borrower together and advise, counsel, and assist in the development of a debt restructuring agreement between parties. Some mediation programs are voluntary and some are mandatory before foreclosure can commence. Agreements under mediation are not mandatory, but good faith participation is usually required.

Pioneered by Iowa and Minnesota, such programs have shown success in reducing farmer-lender tensions and in producing debt restructuring agreements that allow the farmer to continue to farm. Mediation provides some farmers an alternative to using the bankruptcy courts. In accordance with the Agricultural Credit Act of 1987, the Farmers Home Administration now helps finance these programs with matching funds.

The Effect on Agricultural Credit

Laws enhancing the legal rights of farm borrowers relative to lenders has economic consequences for farmers and lenders alike. Obviously, those farmers directly affected by such credit laws can benefit. They can benefit by being relieved from repaying debts or keeping farm property that normally would be relinquished to their lender after foreclosure. Sometimes the property can be retained by paying an amount below market value.

For lenders, the new laws can elevate lending costs and risks. Foreclosure laws that lengthen redemption periods increase lenders' costs because during this period, their asset (collateral to be repossessed) is not providing the lender an economic return or at best is providing a below-market return. In addition, there is a greater possibility of collateral value loss due to depreciation or borrower neglect. Homestead protection and first right of refusal laws have much of the same effect. Homestead protection laws which give special protection to farm homes, buildings, and adjoining land (sometimes up to 160 acres), also diminish the borrowing ability for all farm borrowers because collateral value is reduced. As for the Farm Credit System, the special borrower rights rules imposed on it by the 1987 Act could reduce its competitiveness. This could affect its current financial recovery and its long-term viability.

Debt restructuring laws, such as Chapter 12, requiring debt write-down do not necessarily mean higher lending costs (loan losses), as long as the value of restructured debt is

greater than the amount the lender would receive through foreclosure. However, the risk of future default on the restructured debt is still present, and is an unknown cost to the lender. Also, if the lender loses an opportunity to recoup loan losses when restructured loan collateral appreciates in value, then higher costs are borne by the lender. Lenders are critical of Chapter 12 debt write-down provisions because they lose claim to future appreciation of collateral after being required to write down debt.

Besides immediate farm borrowers and lenders, the entire agricultural credit market is affected by the 1980's changes in lending rules. Any increases in lending costs or risks resulting from the changes may initially be absorbed by lenders, but ultimately higher costs are passed on to all farm borrowers. The extent and ease with which they are passed along depends on the competitiveness of the credit market. In a less competitive agricultural credit market or where lenders have investment options other than farm loans, these costs are more easily passed on.

Greater costs and risks are passed on to borrowers through higher interest rates or reduced access to credit (credit rationing). The likelihood that farm borrowers will experience these outcomes increases as the risk associated with their farm loan increases. Therefore, a borrower who represents a higher-than-average degree of loan risk is most likely to experience fewer financing options and higher interest charges. For these farmers, laws that increase the rights of borrowers could push them toward greater reliance on subsidized credit from Government lenders, such as FmHA.

Measuring the impact of 1980's borrower rights legislation on agricultural credit markets is difficult because of the large

number of other factors involved. The 1987 Farm Credit Situation Survey, conducted by the American Bankers Association (ABA), gives some indication of agricultural banks' opinions and reactions to Chapter 12, and, therefore, similar new agricultural credit laws.

The ABA survey indicates 77 percent of the bankers feel that Chapter 12 decreases the availability of agricultural credit. Moreover, 44 percent of the bank respondents indicated that it improved the borrowers' negotiating position with lenders. When asked about their bank's specific experience with Chapter 12, 65 percent said it increased lending risks, 42 percent said it increased lending costs, and 65 percent said it had increased collateral requirements for new loans. Moreover, 51 percent said some credit applications were denied because of concerns over the new chapter. In the 1988 survey, 41 percent responded that some applications had been denied due to Chapter 12 concerns. Separately, some life insurance companies reacted initially to Chapter 12 by temporarily halting their farm mortgage lending activities.

For many farm borrowers and lenders, borrower rights legislation means loans are now made under a set of rules quite different from just 5 years ago. The new farm lending rules will likely have an impact on agricultural credit markets even after the financial recovery of the farm sector is complete. The new rules particularly affect FCS and FmHA, changing their roles in the agricultural credit market. The new rules help keep some farmers on their farms by avoiding foreclosure or providing mandatory debt relief. But the benefits provided to some borrowers do not come without costs, which are borne by lenders and eventually other farmers.

Many Specialized Crop Farms Can Now Cashflow Land Purchases

by
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Abstract: In 1984 only 10 to 20 percent of specialized wheat and corn/soybean farmers could cashflow a land purchase after a 25 percent down payment. The low rate of cashflow was due to high land prices, high interest rates, and low farm income. It is estimated that at the beginning of 1989 about 52 percent and 61 percent of specialized wheat and corn/soybean farmers, respectively, could successfully cashflow a land purchase. Lower expenses, larger Government payments, and a rebound in commodity prices led to 1989's improved cashflows.

Keywords: Land price, land purchase, cashflow

Given cost structure, commodity price projections, and commodity program price supports, what share of cash grain farmers could cashflow the land currently operated? If most producers can successfully cover production expenses, pay for capital replacement, and service the interest expense on a land purchase, then real estate prices are likely to be stable or to increase. A stable land market is a reflection of a healthy farm economy.

The Farm-Level Data and the Model

The model reframes the research question of "can producers cashflow the variable input and capital requirements of a land purchase," to the much less difficult question of "can producers satisfy the cost requirements of all land operated, including share-rented land, when all land is priced at current market values and current interest rates are paid?" The presumption is that if producers can cashflow their operation at full cost (less a 25-percent down payment), they will tend to be bullish on additional land investment.

In 1987, Hanson, Lucier, and Johnson studied the financial status of 400 corn/soybean farms (which statistically represented 60,000 farms of similar size and type) in 10 Midwest States for the period 1984-1987.

In this study the same question is asked of wheat farms. The scope of the study covers 1984 through 1988 with projections for 1989. Furthermore, the study on corn/soybean farms is also extended through 1989.

The USDA Farm Costs and Return Surveys (FCRS) provide the data for the farm level simulation. The advantages of using FCRS data are: (1) cost structure information is farm specific; (2) the data are comprehensive, including information on asset structure and acres idled to comply with Government programs; and (3) each observation represents a

statistically designated number of farmers of similar enterprise type and size.

Model Formulation

To decide whether the farm operator is financially capable of buying the land he/she is operating, we need to take into account all the operating expenses and the proceeds from that operation. Then, we add to the expenses, the amount of annual interest that farmer has to pay if he/she decides to purchase the land. In the case of specialized farms, i.e., farms having at least 80 percent of the land devoted to one crop specialty, only the proceeds from that crop are considered.

Let us define a cost equation as:

$$C = OPC + OPK + LLC - LVC$$

where C is the total cost related to different crops less costs related to the livestock operation, OPC is the total operating costs, OPK is expenditures for capital replacement, LLC is the cost incurred by the landlord, and LVC is the cost related to the livestock operation.

In the event that a farmer decides to purchase the land, his/her expenses are increased by the property tax and the annual cost of land purchase financing, e.g., the amount of interest. On the other hand the operator does not have to pay rent for the land operated. Therefore, the total cost (TC) can be defined as

$$TC = C + T + I$$

where T is the amount of property tax and I is the amount of interest which should be paid each year if the land is purchased. On the revenue side, the operator receives

$$TR = (Q)(P) + D$$

where the first term on the right represents the revenue from the crop, i.e., Q being the quantity and P being the market

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price of the crop, and D is the Government deficiency payment.

The financial status of the farmer regarding the land purchase decision can be analyzed by looking at the cashflow (CF) of the operator after the purchase of the land. That is,

$$CF = TR - TC.$$

If CF turns out to be positive, the operator can afford to purchase the land through financing and remain financially solvent.

A few refinements of the data are needed for the years that FCRS data are not yet available, e.g., 1988 and 1989. Those refinements include adjusting expenses and land values as a result of price changes, and adjusting yields in States experiencing drought in 1988.

The integrity of the cost structure of individual farm operations is maintained, with updating of input prices for fertilizer, seed, fuel, etc., based on USDA projections. Also, actual (or the most recent year's) capital expenditures are assumed to represent needed capital replacement costs, and are treated as a cashflow requirement.

Assumptions

The assumptions used in the Hanson, et al. study are also maintained in this analysis. Those assumptions are:

- Costs and returns are on a whole-farm basis.
- Participation in Government commodity programs.
- Land values in each year are based on the farmers' own valuations.

- Farm survey data are projected for 1988-89.

- Average first-quarter interest rates ■ Federal Land Banks.

The Model Environment

The wheat farms are from several top wheat producing States (Colorado, Idaho, Kansas, Minnesota, Montana, North Dakota, South Dakota, Oklahoma, Texas, and Washington). The larger specialized wheat farms have more than 200 acres of planted wheat, and furthermore, acres of planted wheat constitute more than 80 percent of their total planted acres. Additionally, these farms have livestock sales of less than \$10,000 annually (which permits the study to focus on the wheat enterprise).

Farms with more than 80 percent of planted corn or soybeans, which constituted more than 90 percent of the total planted acres, were included in the corn/soybean study.

Results of the Study

Land price is one of several important factors that affect farmers' financial status. Table C-1 shows the trend of average per acre land prices in the wheat and corn/soybean States in 1984-88. There was a general downward trend through 1986; in 1987 prices generally began to improve.

A similar trend in the financial status of the wheat farmers can be detected in table C-2. From 1984 through 1987 the percentage of wheat and corn/soybean farms that can cashflow land purchases (figure C-1) moves in the opposite direction of land prices. Land prices fell and cashflows improved. The model projects that approximately 60 percent of Midwest corn/soybean farmers will be able to cashflow land purchases during 1987-89 after a 25-percent down payment. For wheat, the estimate is between 40 and 55 percent.

Table C-1--Average value of farmland and buildings, by State, 1984-88, February 1

State	Farm Type	:	1984	1985	1986	1987	1988	1989
Dollars per acre								
Colorado	Wheat		468	435	357	364	364	364
Idaho	Wheat		814	749	644	567	592	621
Kansas	Wheat/corn/soybean		583	466	387	340	368	390
Minnesota	Wheat/corn/soybean		1,083	823	609	493	563	602
Montana	Wheat		264	222	204	167	164	167
North Dakota	Wheat		439	360	317	282	292	301
South Dakota	Wheat		388	250	215	178	187	204
Oklahoma	Wheat		699	566	481	428	421	459
Texas	Wheat		539	652	541	482	466	443
Washington	Wheat		961	923	812	723	699	727
Illinois	Corn/soybean		1,800	1,314	1,143	1,040	1,114	1,225
Iowa	Corn/soybean		1,499	1,064	841	748	890	1,041
Michigan	Corn/soybean		1,223	1,052	963	833	853	879
Missouri	Corn/soybean		856	695	606	552	572	606
Ohio	Corn/soybean		1,444	1,126	1,013	942	991	1,051
Wisconsin	Corn/soybean		1,046	847	711	626	630	661
Nebraska	Corn/soybean		617	444	364	335	366	421
Indiana	Corn/soybean		1,594	1,259	1,058	931	983	1,061

Source: USDA Land Value Surveys. Values for 1984 and 1985 are as of April 1.

Table C-2--Financial status of large wheat farms,
1984-89 1/

Share of farms	1984	1985	1986	1987	1988	1989
	Percent					
With positive cash flow	20	20	44	54	39	52
With deficiency payments \$50,000 and more	3	9	14	17	3	6
In financial stress	12	9	5	8	8	8

1/ Sales greater than \$100,000.

Maximum deficiency payment limitations have, in recent years, been lowered to \$50,000 per farm. While there are legal avenues such as incorporation that may permit an individual to receive more than \$50,000 in payments, the payment limit has become an increasing concern to many large farmers.

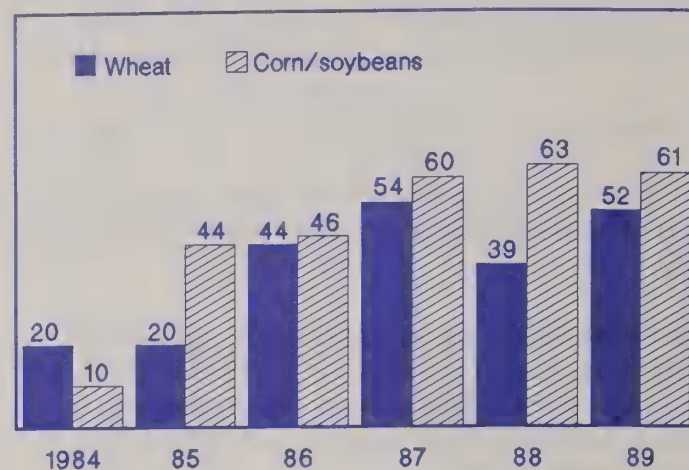
An especially large difference existed between the target price for wheat of \$4.38 per bushel, and the higher of the CCC loan rates or market price during 1986/87 and 1987/88. This caused the payment limit to apply to a number of the largest wheat and corn/soybean operations (when operator and share rentals are treated as one unit) in 1986 and 1987.

The 1988 drought hit four of the major wheat producing States severely, i.e., Minnesota, Montana, and North and South Dakota. The drought caused wheat farmers' ability to cashflow land purchases to decline from 54 percent in 1987 to 39 percent in 1988.

The level of operator financial stress declined from 12 to 5 percent for specialized wheat farmers between 1984 and

Figure C-1

Percent of Commercial Wheat and Corn/Soybean Farms Which Can Cashflow Land Purchases



1986. Stressed farmers are defined to have negative net cashflows and high debt or be technically insolvent with debts exceeding assets. The data suggest that stress continues to be a problem in the late 1980's for 8 percent of wheat farmers. This is due in large part to rising input costs and declining direct Government payments.

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A Financial Ratio Approach to Identifying Imbalances in Farmland Values

by
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Abstract: Two financial ratios derived from a simple capitalization formula were used to track farmland values. The model appears to provide a useful indicator of future farmland values, providing a warning of land price imbalances, such as occurred after 1975, and of improving conditions, such as after 1985.

Keywords: Farmland values, capitalization formulas

Farmland price changes are a focal issue in the agricultural sector since real estate comprises around three-quarters of farm business assets. Knowledge of strengthening land values in the early 1970's would have enabled an astute investor to handsomely share in the 300-percent increase in farmland values between 1970 and 1981 (from \$180 to \$730 billion). Conversely, awareness of the fundamental weakness in land values in the late 1970's would potentially have shielded landowners from the 30-percent decline in land prices in the early 1980's.

Reliable measures of land price strength and underlying "true" values are critical to farm lenders as well. A substantial share of farm debt writeoffs by lenders after 1984 could have been avoided had the underlying, long-run collateral value of land been projected accurately. Just as thousands of farmers suffered foreclosure because they were unable to service debt on "high-priced" late 1970's farmland purchases, many agricultural banks also experienced capital losses and were forced to merge or cease operations because of lower land collateral values. The Farm Credit System reorganized in order to survive multi-billion dollar loan losses and a large decline in its farm loan portfolio.

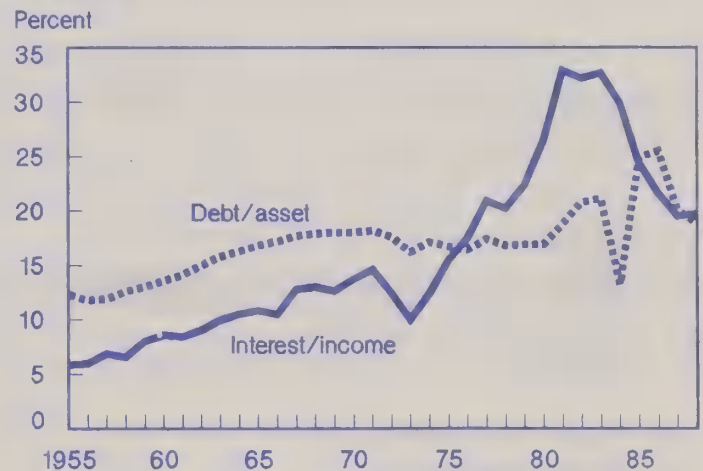
This study offers an approach to the farmland market based on an observed statistical relationship of two conventional financial ratios with clear theoretical underpinnings. A simple statistical model that relies on a limited number of data series was employed with the view that data limitations are perhaps more of a problem in estimation than is often perceived.

The Simple Asset Capitalization Formula

In a riskless, taxless, stationary state equilibrium, the ratio of debt to assets would equal the ratio of interest expense (Interest) to income from assets before interest (Income):

$$\text{Assets} = \frac{\text{Income}}{i} \quad (i=\text{interest rate or returns rate})$$

Figure D-1
Debt/Asset and Interest/Income Ratios, 1955-88



Ratio inversion ■ 1975 identified developing weakness in farmland markets.

$$\frac{\text{Assets}}{\text{Debt}} = \frac{\text{Income}}{\text{Interest}} \quad (\text{multiplying by } 1/\text{Debt})$$

$$\text{Debt} = \frac{\text{Interest}}{\text{Assets}} \quad (\text{inverting})$$

Asset values are based on income from the asset. An overlay of the debt-to-assets ratio against the interest-to-income ratio suggests a long-run equilibrium between the two series (figure D-1).

Another way to view this relation is that should the rate of return to assets exceed the interest rate, more debt capital would be demanded by producers recognizing the benefit of financial leverage.

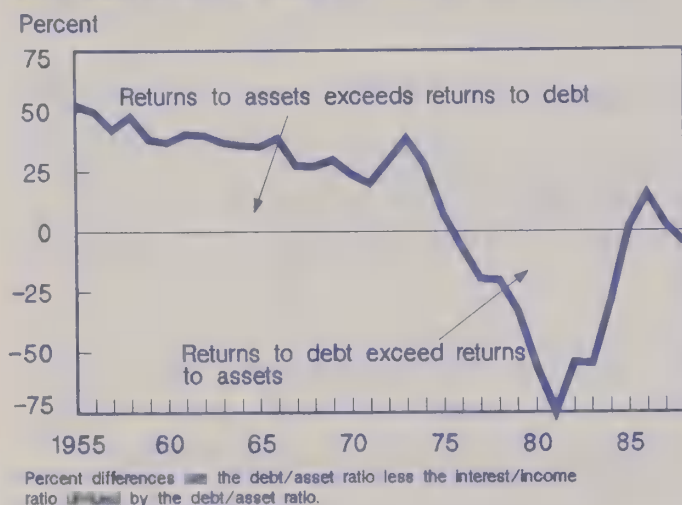
$$\text{Income} = \frac{\text{Interest}}{\text{Assets}} = i.$$

This process would eventually ensure that the rate of return to assets would approximate the interest rate as diminishing marginal returns to capital use occur, or as the marginal cost of capital is bid up through the supply/demand process. This

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Figure D-2

Percent Differences in Debt/Asset and Interest/Income Ratios, 1955-88



adjustment process appeared to be occurring until at least 1975 (figure D-2).

Thus, the divergence between the debt-to-asset ratio and interest-to-income ratio may be an early indicator of future changes in land values. This was so for the crossover periods after 1975 when land values increased dramatically, and after 1985 when land values began to stabilize and improve.

Data Precision vs Complexity in Capitalization Formulas

A capitalization formula that is theoretically robust would include a risk premium parameter, be on an after-tax basis, and be operationalized with observable data on homogenous commercial size farms. Other factors that could explicitly be represented in the formula might be the credit rationing behavior of lenders, and changes in the institutional policies of FmHA, FCS, and bank regulations (Regulation Q). Technological change, farm size, savings rates, the availability of off-farm income and the recent flexibility of loan terms (variable interest rates, lines of credit, etc.) are other candidates for inclusion.

The data needed to make such a complex capitalization formula operational may counteract the gains from additional rigor. Several major adjustments in the income series would be necessary before it can adequately represent a key component of the asset capitalization process. For example, the opportunity cost of unpaid labor and management ought to be deducted from net income. Inventory adjustments and depreciation ought also to be factored into the income series. Other imputations, such as a return to equity in operator dwellings, could also be made

However, these estimates, imputations, and adjustments can typically be complicated and controversial. For example, the true economic rate of depreciation and appropriate discount factors to use in deflating data series are not known and subject to wide debate.

The data available to use in this adjustment process may also be less than ideal. Unpaid operator hours provide an example. Enterprise budgets would suggest about 3 billion hours of such labor would be consistent with sector production levels. But USDA survey information suggests about 6 billion hours were used. Sorting this issue through, in a sector where two of every three producers tends to be part-time, is not an easy task.

Deductions in financial data bases available in agriculture, and the concerns regarding the precision of imputations for unpaid operator inputs, depreciation, etc., suggest the use of an estimation process based on primary observable data. Consequently, this study is based on the following core components: use of the most elementary capitalization model, employment of a limited number of data series, and use of the vector autoregression methods that permit a less "structured" approach to the estimation process.

Statistical Estimation

Vector autoregression (VAR) methods allow dynamic systems to be viewed with minimal a priori restrictions. Spurious restrictions needed for model identification are deferred. VAR involves regressing every variable in the system against all variables lagged. Estimation of the VAR model is relatively straightforward, involving ordinary least squares in each equation. The methodological aspects of VAR have been thoroughly considered for other macroeconomic issues (for example, see Sims).

The simple capital valuation model explicitly includes the present value of future earnings. However, another term was added to identify the effects of inflation. A three-equation VAR model was then estimated with equations for the debt/asset ratio, the interest/income ratio, and for the change in inflation (the change in the change in prices). Net cash

Table D-1--Summary VAR test statistics for Debt/Assets, Interest/Income, and Inflation equations

Statistic	DEBT/ASSETS Equation	INTEREST/INCOME Equation	INFLATION Equation
R-SQUARE	.943	.942	.851
Granger causality for debt/assets	82.422 1/	.741	.100
Granger causality for interest/income	.626	79.645 1/	.103
Granger causality for inflation	.079	.738	45.763 1/

1/ F-test for the subgroup of variables significant at the .05 level.

income (including rent received by nonoperator landlords), assets, debt, and interest were provided from the *Economic Indicators of the Farm Sector* and the GNP Deflator is from the *Economic Report of the President*. Table D-1 presents summary statistics for the system.

For 1989, the VAR forecast debt/assets ratio is 19.17 percent and the interest/income ratio is 19.92 percent. The difference in the two ratios is small. Thus, land costs and farm income appear in better balance in 1988-89 than they were in the late 1970's and early 1980's.

Conclusions

Explicit modeling of the actual capitalization process is notably difficult due to the complexities of taxes, discount factors, changing attitudes toward use of debt and savings, technological changes, the increasing use of purchased inputs, increasing farm size, changes in the behavior of credit and regulatory institutions, increased reliance on off-farm income, etc. This suggests exchanging some theoretical rigor for a more uncomplicated model specification.

An observed relationship between two financial ratios and asset values suggests such a more uncomplicated method of

detecting imbalance in farmland values. Recent major changes in farmland values such as in 1975, 1981, and 1986 are integrated into the relationship between debt to assets and interest to income.

The model may be more suited for detecting historical trends rather than generating point forecasts. Thus, this approach to land value estimation may appeal more to analysts and farm investors who focus primarily on long run trends in land markets.

References for Further Reading

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Appendix table 1--Farm income, assets and debt, and returns 1/

Item	1984	1985	1986	1987	1988F	1989F
Billion dollars						
Income and total returns						
1. Gross farm income 2/	163	156	150	161	166	178 to 182
2. Wages and perquisites to hired labor	9	9	9	10	11	11 to 12
3. Other operating expenses, excluding interest	80	76	70	73	79	83 to 87
4. Capital consumption	19	17	16	14	14	13 to 14
5. Net income from assets and operators' labor and management (1-2-3-4)	55	54	56	64	62	69 to 73
6. Income imputed to operators' labor and management	30	26	27	28	32	31 to 33
7. Residual income to assets (5-6)	26	27	29	37	29	37 to 39
8. Real capital gain to assets	-129	-100	-62	-2	-26	-24 to -30
9. Total return from assets (7+8)	-103	-73	-33	34	3	10 to 14
10. Interest paid	20	18	16	15	15	15 to 16
11. Real capital gain to debt	7	6	4	7	6	5 to 7
12. Total return to equity (9-10+11)	-116	-85	-45	26	-6	0 to 4
13. Real capital gain to assets and debt (8+11)	-121	-94	-58	4	-20	-18 to -22
14. Residual income to equity (12-13)	5	9	13	22	14	21 to 25
Balance sheet 3/						
15. Assets	849	749	692	709	751	785 to 795
16. Debt	191	175	155	143	138	134 to 142
17. Equity (15-16)	658	574	536	567	613	648 to 658
Percent						
Rates of return and interest rates						
18. Rate of return on assets (ROA) (7/15)	2.9	3.4	4.1	5.2	4.0	4 to 6
19. Real capital gain on assets (8/15)	-14.3	-12.6	-8.6	-3	-3.6	-3 to -4
20. Total real return on assets (18+19)	-11.5	-9.1	-4.6	4.9	.5	1 to 2
21. Av. interest rate paid on debt (10/16)	10.6	9.8	9.8	10.0	10.8	10 to 12
22. Real capital gains on debt (11/16)	3.7	3.2	2.5	4.5	4.1	3 to 5
23. Real cost of debt (21-22)	6.9	6.6	7.3	5.5	6.7	6 to 8
24. Rate of return on equity (ROE) ((7-10)/17)	.8	1.5	2.3	3.9	2.4	3 to 4
25. Real capital gain on equity ((8+11)/17)	-17.2	-15.3	-10.5	.8	-3.5	-3 to -4
26. Total real return on equity (24+25)	-16.5	-13.8	-8.1	4.7	-1.0	0 to 1
27. Net return on assets (NROA) (18-21)	-7.7	-6.4	-5.8	-4.8	-6.8	-6 to -7
28. Spread (20-23) 4/	-18.4	-15.7	-11.9	-.6	-6.2	-5 to -6

F = Forecast. 1/ Numbers may not add due to rounding. 2/ Excludes operator dwellings. 3/ Excludes operator households and CCC activity. 4/ When total real rate of return on assets exceeds total real cost of debt, debt financing is profitable.

Appendix table 2--Farm income and cash flow statement, 1984-89

Item	1984	1985	1986	1987	1988F	1989F
Billion dollars						
Farm income sources:						
1. Cash receipts	142.4	144.0	135.1	138.1	150	156 to 163
Crops 1/	69.5	74.2	63.6	61.9	72	72 to 76
Livestock	73.0	69.8	71.5	76.2	78	79 to 82
2. Direct Government payments	8.4	7.7	11.8	16.7	14	10 to 12
Cash Government payments	4.0	7.6	8.1	6.7	8	7 to 11
Value of PIK commodities	4.5	.1	3.7	10.1	6	1 to 2
3. Farm-related income 2/	4.4	5.0	5.1	5.6	6	5 to 7
4. Gross cash income (1+2+3) 3/	155.2	156.8	152.0	160.4	170	168 to 173
5. Nonmoney income 4/	13.4	11.8	10.6	10.0	10	8 to 10
6. Realized gross income (4+5)	168.6	168.6	162.6	170.4	180	178 to 183
7. Value of inventory change	6.3	-2.4	-2.8	-.6	-6	4 to 7
8. Total gross income (6+7)	174.9	166.2	159.8	169.8	186	185 to 190
Production expenses:						
9. Cash expenses 5/ 6/	116.6	110.2	100.6	103.3	113	115 to 119
10. Total expenses	142.7	134.0	122.3	123.5	133	136 to 140
Income statement:						
11. Net cash income: 1/ 6/						
Nominal (4-9)	38.7	46.6	51.4	57.1	58	50 to 55
Deflated (1982\$) 7/	35.9	41.9	45.0	48.6	47	40 to 45
12. Net farm income: 1/						
Nominal total net (8-10)	32.2	32.3	37.5	46.3	41	47 to 52
Deflated (1982\$) 7/	29.9	29.0	32.8	39.4	34	39 to 43
13. Off-farm income	38.9	42.6	44.6	46.8	49	44 to 51
Other sources and uses of funds:						
14. Change in loans outstanding 6/	-1.9	-15.6	-19.9	-12.6	-3	2 to 5
Real estate	-1.1	-6.0	-9.2	-7.7	-4	0 to 3
Nonreal estate 8/	-.8	-9.6	-10.7	-4.9	1	2 to 3
15. Rental income and monetary change	8.9	8.8	7.8	6.8	9	7 to 9
16. Gross cash flow (11+14+15)	45.7	39.8	39.3	51.3	64	62 to 66
17. Capital expenditures 6/	12.5	9.6	8.6	9.8	11	10 to 12
18. Net cash flow (16-17) 1/ 6/	33.2	30.2	30.7	41.5	53	50 to 56

F = Forecast. Totals may not add due to rounding. 1/ Includes net CCC loans. 2/ Income from custom work, machine hire, farm recreational activities, forest product sales, and misc. sources. 3/ Numbers in parentheses indicate components required to calculate a given item. 4/ Value of home consumption of farm products and imputed rental value of farm dwellings. 5/ Excludes depreciation and hired labor perquisites. 6/ Excludes farm households. 7/ Deflated by the GNP implicit price deflator. 8/ Excludes CCC loans.

Appendix table 3--Relationship of net cash to net farm income

Item	1984	1985	1986	1987	1988F	1989F
Billion dollars						
Gross cash income	155.2	156.8	152.0	160.4	170	168 to 173
Minus: Cash expenses	116.6	110.2	100.6	103.3	113	115 to 119
Equals: Net cash income	38.7	46.6	51.4	57.1	58	48 to 52
Plus: Nonmoney income:						
Gross rental value of dwelling	12.3	10.9	9.7	9.1	10	8 to 9
Value of home consumption	.9	.9	.9	.9	1	0 to 1
Value of inventory change	6.3	-2.4	-2.8	-.6	-6	4 to 7
Minus: Noncash expenses:						
Depreciation & capital consumption	23.1	20.9	18.9	17.3	17	16 to 18
Labor perquisites	.5	.5	.4	.5	1	0 to 1
Minus: Household expenses 1/	2.5	2.5	2.4	2.1	2.5	2 to 3
Equals: Net farm income	32.2	32.3	37.5	46.3	41	47 to 52

F = Forecast. Totals do not add due to rounding. 1/ Includes expenses related to operator dwelling.

Appendix table 4--Cash receipts, 1984-89

Item	1984	1985	1986	1987	1988F	1989F
Billion dollars						
Crop receipts: 1/						
Food grains	9.7	9.0	5.6	5.4	8	7 to 10
Wheat	8.6	7.9	4.9	4.9	6	6 to 9
Rice	1.1	1.0	.7	.5	1	1 to 2
Feed grains and hay	15.7	22.5	17.0	13.1	15	13 to 16
Corn	10.5	16.9	12.5	8.8	10	9 to 11
Sorghum, barley, and oats	2.9	3.3	2.3	2.0	2	1 to 3
Hay (all)	2.3	2.3	2.2	2.3	2	1 to 3
Oil crops	13.6	12.5	10.6	10.8	13	13 to 15
Soybeans	12.0	11.2	9.2	9.6	12	11 to 13
Peanuts	1.2	1.0	1.1	1.0	1	1 to 2
Cotton lint and seed	3.7	3.7	3.6	4.0	5	2 to 5
Tobacco	2.8	2.7	1.9	1.8	2	1 to 3
Fruits and nuts	6.7	6.8	7.3	7.9	9	7 to 10
Vegetables	9.1	8.6	8.6	9.2	10	9 to 11
Greenhouse & nursery	5.2	5.4	5.8	6.4	7	6 to 8
Other crops 1/	3.3	3.2	3.4	3.1	3	2 to 4
TOTAL CROPS	69.5	74.2	63.6	61.9	72	72 to 77
Livestock receipts:						
Red meats	40.8	38.6	39.1	44.7	46	45 to 49
Cattle	28.7	27.0	26.9	31.2	31	32 to 35
Calves	2.0	2.1	2.0	2.6	3	2 to 4
Hogs	9.7	9.0	9.7	10.3	9	9 to 11
Sheep and lambs	.5	.5	.5	.6	.5	0 to 1
Poultry and eggs	12.2	11.2	12.7	11.5	12	13 to 15
Broilers	6.0	5.7	6.8	6.2	8	6 to 9
Turkeys	1.7	1.8	2.0	1.7	2	1 to 3
Eggs	4.1	3.3	3.5	2.9	3	2 to 4
Other poultry	.5	.5	.4	.4	*	0 to 1
Dairy products	17.9	18.1	17.8	17.8	17	16 to 19
Wholesale milk 2/	17.7	17.8	17.5	17.6	17	16 to 19
Other livestock	2.0	1.9	1.9	2.2	2	1 to 3
TOTAL LIVESTOCK	73.0	69.8	71.5	76.2	78	79 to 81
TOTAL RECEIPTS	142.4	144.0	135.1	138.1	150	151 to 158
Program 3/	62.2	67.6	56.3	51.5	58	60 to 65
Non-program 4/	80.2	76.6	78.9	84.6	96	91 to 93

F = Forecast. * = Less than \$500 million. Totals may not add due to rounding. 1/ Includes sugar, seed, and other misc. crops. 2/ Milk receipts do not reflect price deductions levied on marketings. 3/ Receipts from commodities directly supported by farm programs. 4/ Commodities not receiving direct support.

Appendix table 5--Farm income distribution by enterprise type 1/

Item	Crops					Livestock		
	Total crops	Cash grain 2/	Tobacco	Cotton	Fruit, nut, vegetables	Total livestock	Red meat	Dairy
Thousands								
Number of farms								
1987	881	436	89	25	83	1,295	890	178
1988F	856	422	87	25	80	1,258	865	173
1989F	833	412	84	24	78	1,225	842	168
Income								
1. Cash receipts:	Million dollars							
Crops								
1987	56,189	21,220	1,743	4,046	15,538	5,643	3,851	801
1988F	66,200	26,800	1,900	5,000	16,600	6,900	4,700	900
1989F	68,000	28,000	2,300	4,500	17,000	7,900	5,000	1,000
Livestock								
1987	4,742	2,994	226	71	106	71,469	35,273	20,487
1988F	4,800	3,100	300	74	100	73,300	37,300	20,300
1989F	4,900	3,000	300	75	110	75,000	36,000	21,000
2. Direct Gov't payments:								
1987	12,058	9,346	108	1,109	70	4,688	3,153	700
1988F	10,400	8,000	100	1,100	60	4,000	2,700	700
1989F	7,900	6,000	100	900	40	3,000	2,000	500
3. Gross cash income: 3/								
1987	75,445	34,679	2,153	5,486	15,998	84,900	43,893	22,499
1988F	83,900	39,000	2,400	6,200	17,100	87,300	46,300	22,400
1989F	83,300	39,000	3,000	5,000	17,000	89,000	45,000	23,000
4. Cash expenses:								
1987	45,435	22,980	1,794	3,405	6,382	57,243	31,481	16,295
1988F	48,000	24,500	1,900	3,600	6,700	64,100	35,000	18,400
1989F	51,100	26,000	2,000	3,900	7,000	67,000	37,000	20,000
5. Net cash income:								
Current dollars 4/								
1987	30,010	11,698	359	2,081	9,617	27,657	12,413	6,203
1988F	35,000	14,600	400	2,600	10,500	23,100	11,300	4,000
1989F	32,200	12,000	700	2,000	10,000	22,000	8,000	3,000
Deflated (1982 \$)								
1987	25,497	9,939	305	1,768	8,171	23,498	10,547	5,270
1988F	29,500	12,700	300	2,200	8,600	19,000	8,500	3,300
1989F	25,500	10,000	600	1,600	8,000	17,000	7,000	3,000
Balance Sheet								
6. Farm assets:								
Real estate								
1987	223,946	104,944	10,818	7,837	36,584	298,631	203,720	51,792
1988F	237,000	111,000	11,200	8,200	38,700	315,900	216,000	54,800
1989F	243,000	114,000	12,000	8,000	40,000	324,000	221,000	56,000
Nonreal estate								
1987	73,557	45,472	2,827	3,559	6,143	112,761	66,275	31,894
1988F	72,500	44,500	2,900	3,500	6,100	114,300	67,100	32,400
1989F	75,000	46,000	3,000	4,000	6,000	116,000	68,000	33,000
7. Total liabilities:								
1987	70,400	41,620	2,034	4,862	7,651	72,293	38,126	24,886
1988F	69,400	41,000	2,000	4,800	7,500	71,000	37,600	24,600
1989F	65,000	38,000	2,000	5,000	7,000	67,000	36,000	23,000
8. Debt-to-asset ratio:	Percent							
1987	23.7	27.7	14.9	42.7	17.9	17.6	14.1	29.7
1988F	23.0	27.0	14.5	41.7	17.2	16.9	13.6	28.7
1989F	20.7	24.2	13.2	37.4	15.6	15.5	12.5	26.0

F = Forecast. Numbers may not add due to rounding. 1/ Farm types are defined as those with 50 percent or more of all sales accounted for by a specific commodity or commodity group. 2/ Includes farms earning at least half their receipts from sales of wheat, corn, soybeans, rice, sorghum, barley, oats, or a mix of cash grains. 3/ Equals 1 + 2 + farm related income. 4/ Equals 3 - 4.

Appendix table 6--Farm production expenses, 1984-89

Item	:	1984	1985	1986	1987	1988F	1989F
Billion dollars							
Farm-origin inputs	:	32.8	30.3	28.9	31.1	37	36 to 40
Feed	:	19.9	18.0	16.2	16.1	21	20 to 24
Livestock	:	9.5	9.0	9.7	12.0	13	11 to 14
Seed	:	3.4	3.4	3.0	3.0	3	3 to 4
Manufactured inputs	:	21.5	21.0	17.0	16.8	18	18 to 22
Fertilizer	:	7.4	7.3	5.8	5.4	6	6 to 8
Fuels and oils	:	7.1	6.6	4.8	4.4	5	4 to 6
Electricity	:	2.2	2.1	2.1	2.4	3	2 to 3
Pesticides	:	4.8	5.0	4.3	4.6	5	5 to 6
Total interest charges	:	21.1	18.7	16.9	15.5	16	15 to 17
Short-term interest	:	10.4	8.8	7.8	7.3	8	7 to 9
Real estate interest	:	10.7	9.9	9.1	8.2	8	7 to 9
Other operating expenses	:	31.4	30.6	29.6	31.3	33	32 to 36
Repair and maintenance	:	6.4	6.4	6.4	6.5	7	7 to 8
Labor expenses	:	9.7	9.8	9.9	10.7	11	11 to 13
Machine hire & custom work	:	2.2	2.2	1.8	2.0	2	2 to 3
Animal health	:	1.3	1.2	1.2	1.2	1	1 to 2
Marketing, storage & transportation	:	4.0	4.1	3.7	3.8	4	4 to 5
Miscellaneous operating expenses	:	7.8	6.9	6.7	7.1	8	6 to 8
Other overhead expenses	:	35.8	33.2	29.7	28.7	29	28 to 31
Capital consumption	:	23.1	20.8	18.9	17.3	17	17 to 18
Taxes	:	4.1	4.2	4.1	4.3	4	4 to 5
Net rent to nonoperating landlords	:	8.6	8.2	6.7	7.0	8	7 to 8
TOTAL PRODUCTION EXPENSES	:	142.7	134.0	122.3	123.5	133	136 to 140
Cash expenses 1/	:	116.6	110.2	100.6	103.3	113	115 to 118

F = Forecast. 1/ Cash expenses equal total expenses minus depreciation, operator dwelling expenses, and noncash labor benefits.

Appendix table 7a--Balance sheet of the farming sector, excluding operator households, December 31

Item	1984	1985	1986	1987	1988F	1989F
Billion dollars						
Farm assets	848.5	748.9	691.7	709.2	751	785 to 795
Real estate 1/	639.6	558.5	510.1	522.6	551	587 to 597
Livestock and poultry	49.6	46.3	47.6	57.9	66	65 to 69
Machinery and motor vehicles	96.9	87.6	80.3	73.9	74	74 to 78
Crops stored 2/	29.6	23.5	19.1	20.5	25	18 to 22
Financial assets 3/	32.8	33.0	34.4	34.3	35	35 to 37
Farm debt	190.8	175.2	155.3	142.7	138	134 to 142
Real estate 4/	103.7	97.7	88.5	80.8	76	75 to 79
Nonreal estate	87.1	77.5	66.8	61.9	62	60 to 64
Total farm equity	657.7	573.7	536.4	566.6	613	648 to 658
Percent						
Selected ratios:						
Debt-to-asset	22.5	23.4	22.5	20.1	18.4	17 to 18
Debt-to-equity	29.0	30.5	29.0	25.2	22.5	21 to 22
Debt-to-net cash income	493.2	376.2	302.2	250.1	236	254 to 264

F = Forecast. 1/ Excludes value of operator dwellings. 2/ Non-CCC crops held on farm plus value above loan rate for crops held under CCC. 3/ Excludes time deposits and savings bonds. 4/ Includes CCC storage and drying loans.

Appendix table 7b--Balance sheet of the farming sector, including operator households, December 31

Item	1984	1985	1986	1987	1988F	1989F
Billion dollars						
Farm assets	949.7	845.3	789.4	813.0	861	868 to 878
Real estate	693.7	606.3	554.0	567.2	599	610 to 620
Livestock and poultry	49.6	46.3	47.6	57.9	66	60 to 64
Machinery and motor vehicles	102.7	92.4	84.4	78.6	79	79 to 83
Crops 1/	29.6	23.5	19.1	20.5	25	18 to 22
Household goods	26.1	27.8	30.5	32.9	39	39 to 43
Financial assets	47.9	49.0	53.8	55.9	58	57 to 61
Farm debt	204.4	188.0	166.8	153.3	150	149 to 157
Real estate 2/	112.4	105.9	95.8	87.4	83	82 to 86
Nonreal estate	92.0	82.2	71.0	65.9	67	67 to 71
Total farm equity	745.2	657.3	622.6	659.8	711	715 to 725
Percent						
Selected ratios:						
Debt-to-asset	21.5	22.2	21.1	18.9	17.4	17 to 18
Debt-to-equity	27.4	28.6	26.8	23.2	21.1	20 to 22
Debt-to-net cash income	528.5	403.7	324.6	268.7	260	300 to 310

F = Forecast. 1/ Non-CCC crops held on farm plus value above loan rate for crops held under CCC. 2/ Includes CCC storage and drying loans.

Appendix table 8--Farm financial ratios: liquidity, solvency, profitability, and financial efficiency

Farm financial ratios:	1981	1982	1983	1984	1985	1986	1987	1988F	1989F
Liquidity ratios:									
Household debt service coverage 1/	2.76	2.77	2.75	2.87	3.45	4.03	4.71	4.9	4.7 to 4.9
Farm business debt service coverage 2/	1.66	1.74	1.70	1.76	2.12	2.47	2.91	3.1	2.8 to 3.0
Debt servicing 3/	0.21	0.23	0.22	0.22	0.19	0.18	0.15	0.1	0.1 to 0.2
Times interest earned ratio 4/	2.57	2.26	1.80	2.72	2.95	3.46	4.26	3.8	4.4 to 4.5
Solvency ratios:									
Debt/asset 5/	18.3	19.7	20.4	22.5	23.4	22.5	20.1	18	17 to 19
Debt/equity 6/	22.4	24.6	25.6	29.0	30.5	29.0	25.2	23	20 to 22
Profitability ratios:									
Return on equity 7/	0.0	-0.3	-1.7	0.8	1.5	2.3	3.9	2.4	3 to 4
Return on assets 8/	1.9	1.9	0.8	2.9	3.4	4.1	5.2	4.0	4 to 6
Net farm to gross cash farm income 9/	18.4	15.6	8.4	20.8	20.6	24.7	28.8	24.0	28 to 30
Financial efficiency ratios:									
Gross ratio 10/	77.6	74.9	75.5	75.1	70.3	66.2	64.4	66.4	67 to 69
Interest to gross cash farm income 11/	13.1	13.9	13.7	13.1	11.4	10.7	9.3	8.9	8 to 10
Asset turnover 12/	14.7	15.4	15.8	17.3	19.6	21.1	22.9	23.3	21 to 23
Net cash farm income to debt ratio 13/	29.7	31.6	30.1	30.8	35.3	40.9	48.3	51.7	50 to 52
Financial leverage index 14/	0.00	-0.15	-2.06	0.26	0.44	0.58	0.75	0.6	0.6 to 0.8

F= Forecast. 1/ Assesses the ability of farm sector households to repay both principal and interest. 2/ Assesses the ability of farm businesses to repay both principal and interest. 3/ Indicates the proportion of gross cash farm income needed to service debt. 4/ Shows the farm sector's ability to service debt out of net income. 5/ Shows the proportion of all assets that are financed with debt. 6/ Measures the relative proportion of funds provided by creditors(debt) and owners(equity). 7/ Measures the ability of farm sector management to realize an adequate return on the capital invested by the owner(s). 8/ Measures how efficiently managers use farm assets. 9/ The profit margin indicates profits earned per dollar of gross income. 10/ Gives the portion of gross cash farm income absorbed by production expenses (claims on farm businesses). 11/ Gives the proportion of gross cash farm income committed to interest payments. 12/ Measures the gross farm income generated per dollar of farm business assets. 13/ Indicates the burden placed on net cash farm income to retire outstanding debt. 14/ Indicates whether or not the use of financial leverage is beneficial.

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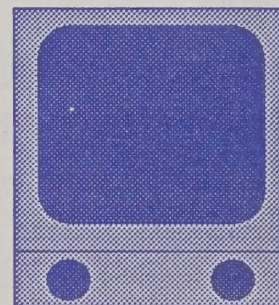
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